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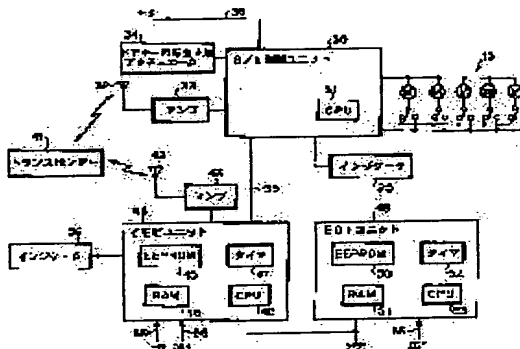
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## (54) BURGLAR PREVENTING DEVICE FOR VEHICLE

## (57)Abstract:

PROBLEM TO BE SOLVED: To use information in common between two control means and to increase the control speed of the whole of a device by a method wherein an S/L control means and an immobilization control means are operated based on information from one and the same transponder.

SOLUTION: A burglar preventing device for a vehicle comprises a superlock(S/L) mechanism to restrict a locking mechanism for locking and unlocking the door of a vehicle in and a closed position to a locking state, and an S/L control means to control the superlock mechanism. Further, an immobilization control means is provided to determine go/no-go of the starting of an engine and prohibit the starting of the engine based on the determination result. In this mechanism, an S/L control unit 30 and an immobilization unit 44 are operated based on information from one and the same transponder 41. Thereby, information is used in common between the two control means and the control speed of the whole of a device is increased.



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CLAIMS

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[Claim(s)]

[Claim 1] The locking constrained mechanism which restrains the locking mechanism which locks a closed position and unlocks the door of vehicles in the locking state Locking restricted control means which control this locking constrained mechanism Engine operation prohibition control means which judge the propriety of engine starting and forbid engine starting based on this judgment result It is the antitheft device of the vehicles equipped with the above, and is characterized by the above-mentioned locking restricted control means and the above-mentioned engine operation prohibition control means operating based on the information from the same transponder.

[Claim 2] The antitheft device of the vehicles according to claim 1 characterized by the above-mentioned engine operation prohibition control means operating based on the information from the above-mentioned transponder obtained through the door key cylinder.

[Claim 3] The antitheft device of the vehicles according to claim 1 characterized by the above-mentioned locking restricted control means operating based on the information from the above-mentioned transponder obtained through the ignition key cylinder.

[Claim 4] The locking constrained mechanism which restrains the locking mechanism which locks a closed position and unlocks the door of vehicles in the locking state Locking restricted control means which control this locking constrained mechanism Engine operation prohibition control means which judge the propriety of engine starting and forbid engine starting based on this judgment result It is the antitheft device of the vehicles equipped with the above, and the above-mentioned engine operation prohibition control means are characterized by changing the propriety judging mode of engine starting according to the control state in the above-mentioned locking restricted control means.

[Claim 5] The antitheft device of the vehicles according to claim 4 with which the above-mentioned engine operation prohibition control means are characterized by decreasing the number of times of a propriety judging of engine starting as compared with a unlocking state in a locking restricted state.

[Claim 6] The antitheft device of the vehicles according to claim 4 with which the above-mentioned engine operation prohibition control means are characterized by emitting the instructions which forbid engine starting in a locking restricted state, without performing the propriety judging of engine starting.

[Claim 7] The locking constrained mechanism which restrains the locking mechanism which locks a closed position and unlocks the door of vehicles in the locking state Locking restricted control means which control this locking constrained mechanism Engine operation prohibition control means which judge the propriety of engine starting and forbid engine starting based on this judgment result It is the antitheft device of the vehicles equipped with the above, and the above-mentioned locking restricted control means are characterized by controlling the above-mentioned locking constrained mechanism according to the propriety judging result of engine starting in the above-mentioned engine operation prohibition control means.

[Claim 8] The antitheft device of the vehicles according to claim 7 characterized by the above-mentioned locking restricted control means changing the above-mentioned locking constrained mechanism into a locking restricted state when the above-mentioned engine operation prohibition control means judge with engine starting being impossible.

[Claim 9] The antitheft device of the vehicles according to claim 7 characterized by the above-mentioned locking restricted control means changing the above-mentioned locking constrained mechanism into a unlocking state when the above-mentioned engine operation prohibition control means judge with engine starting being possible.

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**DETAILED DESCRIPTION**


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[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] Especially this invention relates to the antitheft device of the vehicles equipped with the locking constrained mechanism which restrains the locking mechanism which locks a closed position and unlocks the door of vehicles in the locking state, the locking restricted control means which control this locking constrained mechanism, and the engine operation prohibition control means which judge the propriety of engine starting and forbid engine starting based on this judgment result about the antitheft device of vehicles.

[0002]

[Description of the Prior Art] The key cylinder is prepared in the door of vehicles, and if an inner lock knob is operated from the vehicle interior of a room, for example by operation to the lock position of the key plate inserted in this key cylinder while a door is locked by the closed position, it will unlock.

[0003] Even if a door etc. is in a locking state, therefore, by a theft person's breaking door glass, inserting a metal rod etc. from the crevice between a door and door glass, or carrying out Since it becomes possible to operate the above-mentioned inner lock knob unjustly, and to unlock a locking mechanism and theft damage will be suffered In order to prevent this, by predetermined operation of the key plate inserted in the key cylinder A locking mechanism is restrained in the locking state and door-lock equipment equipped with the locking constrained mechanism which made impossible unlocking operation by the inner lock knob, and the locking restricted control means which control this locking constrained mechanism is proposed variously.

[0004] Moreover, detect positive locking operation of opening-and-closing objects, such as a bonnet of the door at the time of separating from vehicles, a trunk lid, and an engine room, and it is set by the alarm state after fixed time. Although various things to which one of destruction of a door key cylinder or the above-mentioned opening-and-closing objects emitted the alarm immediately with the open eclipse are also proposed without performing predetermined reset action In order to reset the alarm of such a method, that a door key cylinder rotates in an unlocking position from a lock position by the unlocking operation using the regular key [ whether it detects and ] Or usually it is carried out by detecting rocking to the unlocking direction of the lock link of a door locking mechanism.

[0005] Therefore, by a theft person's breaking door glass or inserting a metal rod etc. from the crevice between a door and door glass Operate the above-mentioned inner lock knob unjustly, and in the above-mentioned lock link, make it rock and the unjust method of unlocking to the unlocking direction is received. Since it was defenseless too, a key insertion detection means to detect whether the regular key was inserted in the door key cylinder is established. Only when it is detected that the regular key was inserted, while enabling rocking to the unlocking direction of a lock link, namely, canceling a locking restricted state The antitheft device of the vehicles which cope with an unjust unlocking action as reset an alarm, and enabled it to also prevent a key duplicate is also proposed (refer to JP,62-199555,A).

[0006] The transformer bonder which, on the other hand, transmits an ID cord peculiar to an ignition key is embedded, it has the engine operation prohibition control means which are

transmitted from the above-mentioned transformer bonder when a key is inserted in an ignition key cylinder and which carry out ID-cord collating, judge the propriety of engine starting based on the collating, and forbid starting of an engine based on this judgment result, and the antitheft device of the vehicles which made engine starting impossible is also proposed by keys other than a regular ignition key.

[0007] In addition, on these specifications, henceforth, a locking restricted state is called "super lock" and it is called "S/L" for short. Moreover, the usual locking state is called "normal lock", it is called "N/L" for short, a unlocking state is called "unlocking", and it is called "U/L" for short. Furthermore, the above-mentioned engine operation prohibition control and an engine operation prohibition function are called for short "IMOB control" and a "IMOB function", respectively.

[0008]

[Problem(s) to be Solved by the Invention] By the way, if it sees from a viewpoint of crime prevention nature, although it will be that it is desirable to have the both sides of S/L control means and IMOB control means for example, when parking vehicles and separating from vehicles When it returns to the vehicles which had to perform the both sides of S/L setting operation and IMOB functional setting operation, and were parked, in order to have to perform the both sides of S/L release operation and IMOB functional release operation, there was a problem that operation became complicated.

[0009] It aims at providing the setting operation row of S/L and an IMOB function with the antitheft device of the vehicles which simplified release operation of S/L and an IMOB function, this invention aiming at cooperation with S/L control means and IMOB control means in view of an above-mentioned situation, and raising crime prevention nature.

[0010]

[Means for Solving the Problem] The S/L mechanism which restrains the locking mechanism which invention indicated to the claim 1 locks the door of vehicles at a closed position, and is unlocked in the locking state, In the antitheft device of the vehicles equipped with the S/L control means which control this S/L mechanism, and the IMOB control means which judge the propriety of engine starting and forbid starting of an engine based on this judgment result It is characterized by the above-mentioned S/L control means and the above-mentioned IMOB control means operating based on the information from the same transponder.

[0011] In this case, you may make it the above-mentioned IMOB control means operate based on the information from the transponder obtained through the door key cylinder, or may make it operate based on the information from a transponder that the above-mentioned S/L control means were obtained through the ignition key cylinder (claim 2) (claim 3).

[0012] The S/L mechanism which restrains the locking mechanism which invention indicated to the claim 4 locks the door of vehicles at a closed position, and is unlocked in the locking state, In the antitheft device of the vehicles equipped with the S/L control means which control this S/L mechanism, and the IMOB control means which judge the propriety of engine starting and forbid starting of an engine based on this judgment result The above-mentioned IMOB control means are characterized by changing the propriety judging mode of engine starting according to the control state in S/L control means.

[0013] In this case, you may make it forbid engine starting, without making it the above-mentioned IMOB control means decrease the number of times of a propriety judging of engine starting in an S/L state as compared with an U/L state, or the above-mentioned IMOB control means performing the propriety judging of engine starting in an S/L state (claim 5) (claim 6).

[0014] The S/L mechanism which restrains the locking mechanism which invention indicated to the claim 7 locks the door of vehicles at a closed position, and is unlocked in the locking state, In the antitheft device of the vehicles equipped with the S/L control means which control this S/L mechanism, and the IMOB control means which judge the propriety of engine starting and forbid starting of an engine based on this judgment result It is characterized by controlling an S/L mechanism according to the propriety judging result of engine starting in the above-mentioned S/L control means and IMOB control means.

[0015] In this case, when S/L control means may be made to change an S/L mechanism into an S/L state when IMOB control means judge with engine starting being impossible, or IMOB control means judge with engine starting being possible (claim 8), S/L control means cancel an S/L state and may be made to change into an U/L state (claim 9).

[0016]

[Effect of the Invention] According to invention indicated to the claim 1, since S/L control means and IMOB control means operate based on the information from the same transponder, information can be share-ized among both control means, and the control speed of the whole equipment can be raised.

[0017] According to invention indicated to the claim 2, since the propriety judging of engine starting is performed by the door key cylinder side, it becomes unnecessary to perform the above-mentioned propriety judging by the ignition key cylinder side, and operability improves.

[0018] If it has the regular ignition key, raising the crime prevention nature by S/L setup according to invention indicated to the claim 3 since S/L control means operate according to the propriety judging of engine starting by the ignition key cylinder side, S/L release of since there is no vehicle room becomes easy, and can raise the escape nature from the vehicle interior of a room.

[0019] According to invention indicated to the claim 4, since it is made for IMOB control means to change the propriety judging mode of engine starting according to the control state in S/L control means, the propriety judging of engine starting according to the S/L control demand can be performed.

[0020] According to invention indicated to the claim 5, in an S/L state, since IMOB control means are decreasing the number of times of a propriety judging of engine starting as compared with an U/L state, they can make promptly judgment that engine starting is impossible, and can raise crime prevention nature at the time of S/L.

[0021] According to invention indicated to the claim 6, since engine starting is forbidden without IMOB control means performing the propriety judging of engine starting at the time of S/L, the load of IMOB control means is mitigable.

[0022] According to invention indicated to the claim 7, since S/L control means control an S/L mechanism according to the propriety judging result of engine starting in IMOB control means, a crime prevention performance can be raised.

[0023] According to invention indicated to the claim 8, since S/L control means operate an S/L mechanism when IMOB control means judge with engine starting being impossible, a theft person can be confined in the vehicle interior of a room.

[0024] According to invention indicated to the claim 9, since S/L control means change an S/L mechanism into an U/L state when IMOB control means judge with engine starting being possible, the inside of engine performance can raise the escape nature from the vehicle interior of a room.

[0025]

[Embodiments of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing.

[0026] Drawing 1 is the system block view of the gestalt of 1 operation of the antitheft device of the vehicles by this invention. The antitheft device of the gestalt of this operation is equipped with the S/L control unit 30 which controls the actuator unit 15 which operates a door-lock mechanism, and the IMOB unit 44 which judges the propriety of engine starting with the EGI unit 49 which performs engine control.

[0027] The ignition key cylinder prepared in the door key cylinder and driver seat which were attached in the door is equipped with the antennas 32 and 42 which receive the signal from a transponder 41, respectively while the common ignition key which embedded the transponder 41 is inserted and operates. The signal incorporated by antennas 32 and 42 is amplified with amplifier 33 and 43, respectively, and is inputted into the S/L unit 30 and the IMOB unit 44, respectively.

[0028] The antenna 32 formed in the door key cylinder is an induction coil antenna which voltage generates by inserting an ignition key, and the antenna 42 formed in the ignition key

cylinder is an induction coil antenna which is interlocked with ON-OFF of an ignition switch and operates.

[0029] The signal with which the S/L control unit 30 expresses an S/L state, the present locking state, i.e., N/L state, of a door, or an U/L state, While transmitting the voltage value which occurred by having inserted the ignition key in the door key cylinder, and was amplified with amplifier 33 to the IMOB unit 44 through the communication line 35 When it is judged by the IMOB unit 44 that the key inserted in the door key cylinder does not have predetermined ID data, it receives the information from the IMOB unit 44, and operates the actuator 34 which forbids rotation of a key. Moreover, the S/L unit 30 carries out predetermined period (for example, 3 seconds) lighting of the indicator 25 formed in the vehicle interior of a room, when it changes into an S/L state. The dc-battery power supply (+B) 36 is connected to the S/L unit 30 and the actuator 34 for key rotation prohibition.

[0030] The IMOB unit 44 is a controller which forbids engine starting by EGI (electronic fuel injection) for theft prevention, and when a driver turns OFF an ignition switch at the time of vehicles alighting, it is set automatically.

[0031] EEPROM45 in which the IMOB unit 44 stores data beforehand, RAM46 which stores data temporarily in transfer of data with the EGI unit 49, The timer 47 which sends as data the timing of transfer of the data stored in RAM46, It consists of CPUs48 which control transfer of data with the EGI unit 49 based on the timing information from a timer 47, and exchange information through the communication line 35 between the S/L units 30.

[0032] Moreover, the IMOB unit 44 transmits the content of the above-mentioned control signal through the communication line 35 also to the S/L unit 30 while ID data are given from a transponder 41 and it transmits a predetermined control signal to the EGI unit 49 based on the voltage value amplified with amplifier 43 while being able to give the ON-OFF information on an ignition switch based on the dc-battery power supply (+B) 36 and the ignition switch power supply (IG1) 55.

[0033] In addition, since it connects with the dc-battery power supply 36, even if the IMOB unit 44 turns OFF an ignition switch and stops an engine, a power supply is supplied and it holds the standby state. Moreover, it connects with the indicator 56 formed in the vehicle interior of a room, and blink and putting out lights are controlled by ID data transmitted from a transponder 41.

[0034] EEPROM50 which the EGI unit 49 is a controller which controls a rotational frequency, fuel oil consumption, etc. of an engine, and stores data beforehand like the IMOB unit 44, RAM51 which stores data temporarily in transfer of data with the IMOB unit 44, It consists of a timer 52 which sends as data the timing of transfer of the data stored in RAM51, and CPU53 which controls transfer of data with the IMOB unit 44 based on the timing information from a timer 52.

[0035] Moreover, the EGI unit 49 receives a predetermined control signal from the IMOB unit 44, and controls a starter, fuel oil consumption, etc. based on the signal. Since this EGI unit 49 operates with the switch power supply 55 which is interlocked with ON-OFF of an ignition switch and operates unlike the case of the IMOB unit 44, a power supply will be shut off when an ignition switch is turned OFF.

[0036] The schematic diagram of the circumference of the key cylinder switch formed in the key cylinder in which the block diagram showing the outline composition of the door-lock equipment with which drawing 2 is controlled by the S/L control unit 30, and drawing 3 are attached in the door by the side of a driver seat, and drawing 4 are the schematic diagrams of the door-lock equipment attached in the door by the side of a driver seat.

[0037] In the key cylinder 1 of the door by the side of the driver seat shown in drawing 2 It adds to the antenna 32 which receives ID information from a transponder 41 mentioned above. Key cylinder switch SW1 which has composition as shown in drawing 3 It is prepared. the door key cylinder 1 By the ignition key (illustration is omitted) inserted in this, it is the key cylinder switch SW1. It rotates in the lock position B or the unlocking position C from a center valve position A with traveling contact 4a. By connecting arm 1a ( drawing 4 ) attached in the key cylinder 1 with the lock link 3 shown in drawing 4 through the rod 2, this lock link 3 In



connection with rotating in a lock position in connection with the key cylinder 1 rotating in a lock position (B position), and the key cylinder 1 rotating in an unlocking position (C position), it rotates in an unlocking position.

[0038] Key cylinder switch SW1 Rotation shaft 5a supported to revolve by the substrate 5 so that it might rotate to the key cylinder 1 and one as shown in drawing 3 , It has movable contact piece 4a fixed to this rotation shaft 5a, and the circular fixed contact pieces 4b and 4c and 4d of grounding contact pieces fixed on the substrate 5, and the end of movable contact piece 4a is always in slide contact with 4d of grounding contact piece points. One fixed contact piece 4b contacts the other end of movable contact piece 4a, when the key cylinder 1 rotates in the lock position B, and fixed contact piece 4c of another side contacts the other end of movable contact piece 4a, when the key cylinder 1 rotates in the unlocking position C.

[0039] Since direct and fixed contact piece 4b is connected to the terminal 20 of the S/L control unit 30 shown in drawing 5 , respectively through Resistance R, and fixed contact piece 4c is not connected to a terminal 20 at all when movable contact piece 4a is in the center valve position shown in drawing 3 , although the terminal 20 is maintaining the predetermined voltage value Since it is grounded through Resistance R when movable contact piece 4a contacts fixed contact piece 4b by the side of a lock When the 1st voltage value which hits a lock signal occurs for a terminal 20 and movable contact piece 4a contacts fixed contact piece 4c by the side of unlocking, the 2nd voltage value which hits an unlocking signal occurs for a terminal by being grounded.

[0040] The door-lock equipment shown in drawing 4 has the latch main part 6 which equipped the rockable with the above-mentioned lock link 3 and the release link 7, the outer handle 10 and the inner handle 11 of a door are connected with the ends of the release link 7 respectively through rods 8 and 9, and the release link 7 is coordinated with the claw lever (release member) 13 through the wide swing mechanism 12 established in the latch main part 6. When a lock position has the lock link 3, the wide swing mechanism 12 intercepts connection on the release link 7 and the claw lever 13, and makes the outer handle 10 and the inner handle 11 swing wide.

[0041] Since the mode of each element which constitutes these door-locks equipment of operation is the same as that of existing door-lock equipment, the detailed explanation is omitted.

[0042] 15 is an actuator unit and this actuator unit builds in the S/L actuator 17, the wide swing mechanism 18 driven with this S/L actuator 17, and the power door-lock actuator 21. Moreover, this actuator unit 15 is equipped with the lever 22 connected with the inner lock knob 19 through rod 14a, and the lever 23 connected with the lock link 3 through rod 14b respectively free [ rocking ], and the above-mentioned wide swing mechanism 18 is infixed between shaft 22a which rotates by the lever 22, and shaft 23a which rotates by the lever 23.

[0043] This wide swing mechanism 18 intercepts the connection which minded connection between the lock links 3 and the inner lock knobs 19 in a lock position, i.e., rod 14a, levers 22 and 23, and rod 14b in the state of S/L, even if it operates the inner lock knob 19, it makes this swing wide, and it makes impossible lock release operation by the inner lock knob 19.

[0044] Whether a lock position has the lock link 3 of the door of a driver seat or it is in an unlocking position are the lock link switch SW2 which operates corresponding to the movement of this lock link 3. Although detected, it is this switch SW2. It is prepared in the actuator unit 15. Moreover, change SUICHI SW3 which changes a motor circuit with operation of this actuator unit 15 like the after-mentioned into the actuator unit 15 It is prepared.

[0045] Moreover, the motor which the power door-lock actuators 21 formed in the actuator unit 15 change [ motor ] other doors into a lock state all at once by door-lock operation of the key cylinder 1 of the door of a driver seat, and operates this power door-lock actuator 21 can make the motor which operates the S/L actuator 17 serve a double purpose.

[0046] In addition, in drawing 4 , although the S/L actuator 17, the wide swing mechanism 18, and the power door-lock actuator 21 are not illustrated, since it is indicated by JP,62-

199555,A etc., for example, detailed explanation is omitted about the wide swing mechanism which accompanies an S/L actuator and \*\*.

[0047] Drawing 5 is drawing showing the composition of the electrical circuit of door-lock equipment.

[0048] the microcomputer 31 carried on the S/L control unit 30 -- the above-mentioned key cylinder switch SW1 And lock link switch SW2 from -- the input port into which a signal is inputted -- in addition, the ignition key switch SW4, the key loess switch SW5, and (switch which will be turned on on if an ignition key is inserted in an ignition key cylinder) a door switch SW6 from -- the signal is equipped with the input port inputted, respectively

[0049] Moreover, the microcomputer 31 is equipped with the input port into which the signal from the transponder 41 received with the antenna 32 formed in the door key cylinder 1 is amplified and inputted with amplifier 33.

[0050] Furthermore, the microcomputer 31 is equipped with the output port which outputs an U/L command signal, an N/L command signal, and an S/L command signal, respectively, the output port which operates the indicator 25 which indicates that it changed into the S/L state, the output port which transmits information to the IMOB unit 44, and the output port which drives the actuator 34 which forbids rotation of the key inserted in the door key cylinder 1.

[0051] Furthermore, relay RL1 excited by the U/L command signal outputted to the S/L control unit 30 from a microcomputer 31 Relay RL2 excited by the N/L command signal The relay RL3 excited by the S/L command signal is formed. These three relay RL1 -RL(s)3 Although the output terminal of the stationary contact a connected to the battery power supply 36, the grounded stationary contact b, and the S/L control unit 30 is equipped with the traveling contact c connected, respectively and the traveling contact c is connected to the stationary contact b of the earth side in the state of un-exciting, if excited, a traveling contact c will be connected to the stationary contact a by the side of a battery power supply.

[0052] Moreover, changeover switch SW3 changed with operation of the actuator 17 of the S/L mechanism 16 It has the traveling contact c connected to one terminal of the stationary contact a connected to the N/L output terminal in the U/L state of illustration, the stationary contact b connected to the S/L output terminal, and Motor M. The other-end child of Motor M is connected to the U/L output terminal.

[0053] By rotating the ignition key inserted in the door key cylinder 1 from a center valve position A to the lock position B in the gestalt of this operation, an N/L command signal is outputted from a microcomputer 31, and it is relay RL2. It is excited and supply voltage is impressed to an N/L output terminal. Moreover, by repeating a key plate from a center valve position A twice to the lock position B, and rotating in the setup time (for example, for 3 seconds), an S/L command signal is outputted from a microcomputer 31, and it is relay RL3. It is excited and supply voltage is impressed to an S/L output terminal. Furthermore, by rotating a key plate from a center valve position A to the unlocking position C, an U/L command signal is outputted from a microcomputer 31, and it is relay RL1. It is excited and supply voltage is impressed to an U/L output terminal.

[0054] Next, changeover switch SW3 in the case of shifting to other states from each state of U/L, N/L, and S/L Operation is explained.

[0055] (1) From an U/L state, from the U/L state shown in drawing 5 to an N/L state, an N/L command signal is outputted from a microcomputer 31, and it is relay RL2. When excited, current is an N/L output terminal to the switch SW3. A stationary contact a, Motor M, an U/L output terminal, and relay RL1 Only a predetermined short time flows to the earth side through a stationary contact b. While predetermined carries out [ Motor M ] short-time rotation for example, in the right direction, the power door-lock actuator 21 drives, and all doors are made a lock state by this and being in an N/L state by it, the traveling contact c of a switch SW3 is changed to a stationary-contact b side.

[0056] (2) A microcomputer 31 to an S/L command signal is outputted to an S/L state from the above-mentioned N/L state from an N/L state, and it is relay RL3. When excited, current

is an S/L output terminal to the switch SW3. A stationary contact b, Motor M, an U/L output terminal, and relay RL1 Only a predetermined short time flows to the earth side through a stationary contact b. Motor M rotates in the right direction to a short-time predetermined pan, the S/L actuator 17 drives, the wide swing mechanism 18 operates, it will be in an S/L state, and predetermined-time lighting of the indicator 25 will be carried out by this.

[0057] (3) A microcomputer 31 to an U/L command signal is outputted to an U/L state from the above-mentioned N/L state from an N/L state, and it is relay RL1. When excited, current is an U/L output terminal to Motor M and a switch SW3. A stationary contact b, an S/L output terminal, and relay RL3 Only a predetermined short time flows to the earth side through a stationary contact b. While predetermined carries out [ Motor M ] short-time rotation at an opposite direction, the power door-lock actuator 21 drives in the release direction, and the lock of all doors is canceled by this and being in an U/L state by it, the traveling contact c of a switch SW3 returns to a stationary-contact a side.

[0058] (4) A microcomputer 31 to an U/L command signal is outputted to an U/L state from the above-mentioned S/L state from an S/L state, and it is relay RL1. When excited, current is an U/L output terminal to Motor M and a switch SW3. A stationary contact b, an S/L output terminal, and relay RL3 It flows to the earth side rather than the above through a stationary contact b for a long time. Motor M rotates to an opposite direction for a long time [ predetermined ], the S/L actuator 17 drives in the release direction, and the wide swing mechanism 18 is made a non-actuation state by this. Moreover, while the power door-lock actuator 21 drives in the release direction, and the lock of all doors is canceled and being in an U/L state, it is a switch SW3. A traveling contact c returns to a stationary-contact a side.

[0059] Drawing 6 is a timing chart which shows an example of operation when shifting to N/L and an S/L state from an U/L state.

[0060] a time --  $t_1$  -- setting -- key cylinder switch SW1 While the N/L signal output which has the predetermined pulse width  $T_1$  by the bird clapper occurs in ON, and the power door-lock actuator 21 ( drawing 2 ) operates to it and being in an N/L state at a lock side, the start edge E1 of this N/L signal is answered, and the timer which makes a setting time a predetermined time  $T_3$  (for example, 3 seconds) is set. And it sets to  $t_2$  the time of being, before the setting time  $T_3$  of this timer passes. An S/L signal output occurs by operating again the key inserted in the door key cylinder 1 in a lock position, and generating an N/L signal output again. While the S/L actuator 17 ( drawing 2 ) operates and shifting to an S/L state by this, the indicator 25 which indicates that it changed into the S/L state is turned on between the setup times  $T_4$  (for example, 3 seconds). Moreover, it sets in an N/L state and the S/L state, and is the key cylinder switch SW1. If it is operated in an unlocking position, the U/L signal output which has the predetermined pulse width  $T_1$  will occur, and it will return to an U/L state.

[0061] In addition, since there is also a possibility that the S/L actuator 17 may malfunction when it shifts to an S/L state extremely for a short time, after changing into the N/L state The OFF time of time  $T_2$  is prepared after the ON time  $T_1$  of an N/L signal, and even if it is the case where multiple-times operation of the key is carried out extremely for a short time, the OFF time (ON prohibition time) of  $T_2$  intervenes at least between the pulses which an N/L signal output adjoins. According to the performance of the S/L actuator 17, it decides on time  $T_1$  and  $T_2$ .

[0062] Thus, since it will shift to an S/L state if the key inserted in the door key cylinder 1 is operated in the setting time  $T_3$  of a timer at a predetermined number, for example, a 2 times lock position, it can prevent shifting to an S/L state against the volition of a driver.

[0063] In addition, you may make it the above-mentioned timer start a time check from the fall edge E2 of an N/L signal. Moreover, shortly after operating it contrary to this in the number-of-times (for example, 3 times) lock position beyond the predetermined number although an S/L state may be made to be held even if more than a predetermined number ( drawing 6 2 times) operates a key in a lock position how many times if it is in the setting time  $T_3$  of a timer, you may make it return to an U/L state. Then, when it has changed into an S/L state accidentally, an S/L state can be canceled immediately.

[0064] Or after the key plate was operated last time in the lock position, when it is again operated in a predetermined time regardless of the number of times of operation of a key plate in a lock position, you may make it generate an S/L signal output.

[0065] Drawing 7 is a flow chart which shows the manipulation routine corresponding to drawing 6 roughly. S expresses each step.

[0066] First, key cylinder switch SW1 It judges whether it changed to the lock (S1). When it changes to a lock, (S1:YES) and T3 timer are started (S2). while the number of times which changed to the lock of the key cylinder switch SW1 is under a predetermined number (it NO(s) S3: --) When a predetermined number is 2 times and 1 time and a predetermined number are 3 times, they are 1 time and 2 times, and the key cylinder switch SW1. The counter which counts the number of times which changed to the lock is incremented, and (S4) and an N/L signal are outputted (S5).

[0067] Key cylinder switch SW1 If it is within a time [ to which (S3:YES) above-mentioned T3 timer is operating ] when judged with having changed to the lock more than the predetermined number (S6:YES), an N/L signal and an S/L signal will be outputted simultaneously (S7, S8).

[0068] Next, with reference to drawing 8 , the transceiver procedure of the data between a transponder 41, the IMOB1 unit 44, and the EGI unit 49 is explained.

[0069] Drawing 8 is drawing explaining the judgment procedure of ID data of the transponder 41 which has a certain peculiar ID data. In addition, in the following explanation, the ID cord showing the peculiar code of an ignition key is transmitted to the IMOB1 unit 44 from a transponder 41, and the password called codeword (it is hereafter called "CW" for short) is transmitted to the EGI unit 49 from the IMOB1 unit 44. Moreover, CW is a code registered into the IMOB1 unit 44 and the EGI unit 49 one piece at a time, respectively, and the same CW is registered into each unit.

[0070] In drawing 8 , the ignition key equipped with the transponder 41 is inserted in the keyhole of an ignition key cylinder, and it is the ignition switch SW4. If it is made to rotate and an engine is operated, the EGI unit 49 advances CW demand to the IMOB1 unit 44, and in response to it, the IMOB1 unit 44 will advance ID request to a transponder 41, and it will transmit ID signal used as the trigger signal of the IMOB1 unit 44 to the IMOB1 unit 44 from a transponder 41. <BR> [0071] In the IMOB1 unit 44, the ID cord of the transmitted transponder 41 is temporarily stored in RAM46 in a unit 44. Then, the ID cord registered into EEPROM45 in the IMOB1 unit 44 and the ID cord transmitted from the transponder 41 are collated in CPU48. If the collating result of the IMOB1 unit 44 of an ID cord corresponds, it will transmit an engine performance enabling signal (IMOB1 functional release command) and CW to the EGI unit 49. When inharmonious, an engine performance inhibiting signal (IMOB1 functional setting command) is transmitted, and the EGI unit 49 stops an engine in response to the signal.

[0072] If in agreement, it will store CW from the IMOB1 unit 44 in RAM51, and the EGI unit 49 collates CW from the IMOB1 unit 44, and CW registered into EEPROM50 in the EGI unit 49, and if not in agreement, it will stop [ an engine is continued and it operates, and ] an engine.

[0073] Drawing 9 - drawing 12 are flow charts which show the judgment procedure of the ID cord by the side of the IMOB1 unit 44.

[0074] It is the ignition switch SW4 by the ignition key which processing was started as shown in drawing 9 - drawing 11 , and built in the transponder 41. If it rotates to ON position, it will be in the state waiting for an IMOB1 functional release judging, and will become the mode which permits engine starting temporarily. Then, it is the ignition switch SW4 by the ignition key with a built-in transponder. It rotates to a starter position and judges whether the engine started or not (S11). When it is judged that it progresses to S12 and does not start when an engine starts (S11:YES) (S11:NO), a return is carried out at the start time of a program. It judges whether it is satisfied [ with S12 ] of predetermined conditions (engine-speed 500rpm, state stabilized more than by voltage 10V). When predetermined conditions are satisfied (S12:YES), it judges whether CW demand was advanced from the EGI unit 49 side (S13). If CW demand is advanced (S13:YES), after advancing ID request to a transponder 41 (S14), When it judges whether ID reply from the transponder 41 which advanced ID request was received (S15) and a reply is received (S15:YES), it progresses to S16, and when a reply is not received

(S15:NO), it progresses to S29 of drawing 12 .

[0075] In S16, it judges whether the ID cord is registered into EEPROM45 built in the IMOB unit 44. When the ID cord is not registered (S16:NO), after progressing to S24 of drawing 10 , storing an ID cord in RAM46 temporarily and transmitting an ID cord and CW to the EGI unit 49 with the ID non-registered command (IE command) after that (S25), it judges whether there was any reply to transmission of an ID cord and CW from the EGI unit 49 (S26). If (S26:YES) and its reply become O.K. (that is, ID of a transponder 41 and ID registered into the EGI unit 49 coincidence) when there is a reply from the EGI unit 49, ID stored in RAM46 of the IMOB unit 44 will be registered into EEPROM45 (S27), and an indicator 46 will be switched off (S28).

[0076] On the other hand, when the ID cord is registered into EEPROM45 of the IMOB unit 44 (S16:YES), it progresses to S17 shown in drawing 11 , and ID transmitted from the transponder 41 and ID registered into the IMOB unit 44 are collated. And it judges whether these ID is in agreement (S18), and when in agreement, a (S18:YES) IMOB functional release command and CW are transmitted to the EGI unit 49 (S19), and this program is ended.

[0077] Moreover, when these ID is not in agreement (S18:NO), an IMOB functional setting command is transmitted to the EGI unit 49 (S20), and processing of S13-S17 is again repeated in S21 after that. And it judges whether ID again transmitted from the transponder 41 and ID registered into the IMOB unit 44 are in agreement (S22), when in agreement (S22:YES), it progresses to S19, and when not in agreement (S22:NO), an IMOB functional setting command is again transmitted to the EGI unit 49 (S23), and it progresses to S29 of drawing 12 .

[0078] In addition, an IMOB function is the ignition switch SW4. Since it is automatically set up by turning OFF, if the IMOB function is not canceled, it will be in the state where the IMOB function was set up, or the above-mentioned state waiting for an IMOB functional release judging. That is, S23 and the IMOB functional setting command of S35 of drawing 12 mentioned later mean an IMOB functional setting maintenance command correctly.

[0079] <ID judging procedure by the side of the IMOB unit 44 at the time of ID-cord transmitting impotentia>, next ID judging procedure at the time of the ID-cord transmitting impotentia to the IMOB unit 44 by failure of a transponder 41 are explained. Thus, when a transponder 41 breaks down and an ID cord cannot transmit, by the IMOB unit 44 side, it warns of the ability of ID signal not to be read first that ID signal from a transponder 41 is non-receipt, or by blinking a warning lamp etc. to an operator (driver). In response to this warning, an operator (driver) recognizes the abnormalities of a transponder 41. Moreover, that ID signal cannot be read means that ID signal is non-receipt or the state where the signal wave form showing the ID cord which a code was not transmitted or was transmitted has become blunt.

[0080] Drawing 12 is a flow chart which shows the judgment procedure of the ID cord by the side of the IMOB unit 44 at the time of transmitting impotentia. When ID reply from a transponder 41 is not received ( drawing 9 , S15:NO), it progresses to S29 shown in drawing 12 , and is judged as an ID-cord non-receipt state, a warning lamp is blinked, and abnormalities, such as failure of a transponder 41 or an open circuit of the communication line between an antenna 42 - the IMOB unit 44, are reported to a driver. Then, ignition switch SW4 of a driver It judges whether there was any CW input by predetermined operation (S30). Ignition switch SW4 When there is a CW input by ON-OFF operation (S30:YES), CW registered into EEPROM45 in the IMOB unit 44 and CW inputted by above-mentioned predetermined operation are collated (S31). And when it judges whether CW is in agreement (S32) and it is judged that it is in agreement (S32:YES), an IMOB functional release command and CW are transmitted to the EGI unit 49 (S33), and a warning lamp is switched off (S34).

[0081] On the other hand, when it is judged that CW is not in agreement (S32:NO), after transmitting an IMOB functional setting command to the EGI unit 49 by S35, a return is carried out to S11 of drawing 9 . Moreover, when it is judged that there is no CW input by predetermined operation, it progresses to (S30:NO) and S35, and an IMOB functional setting command is transmitted to the EGI unit 49.

[0082] Next, the judgment procedure of CW by the side of the EGI unit 49 is explained with reference to the flow chart of drawing 13 and drawing 14.

[0083] In drawing 13, if processing is started, the number of times of CW demand to the release judging waiting and the IMOB unit 44 of an IMOB function will start the count between 500 mses from Ignition ON with a timer by the zero state (S41). And when it judges whether the command write-in [ additional ] was received (S42) and the command write-in [ additional ] is not received (S42:NO), it progresses to S43, and although the additional writing of an ID cord is performed when the command write-in [ additional ] is received (S42:YES), it \*\*\*\*\* about the content of the additional writing of this ID cord.

[0084] At S43, an engine speed is 500rpm as predetermined conditions. It judges whether the above and voltage are more than 10V. And when it judges whether the count of the 500 mses started by S41 was completed when predetermined conditions were fulfilled (S43:YES) (S44) and a count is completed (S44:YES), CW demand is given from the EGI unit 49 to the IMOB unit 44 (S45). Then, it judges whether there is any reply of an IMOB functional release command and CW from the IMOB unit 44 to the EGI unit 49 (S46). When it is judged that there is a reply of an IMOB functional release command and CW (S46:YES), Although it progressed to S49, when it is judged that there is no reply (S46:NO), it judges whether CW demand has already been performed 5 times to the IMOB unit 44 (S47). When it is judged that CW demand is performed 5 times (S47:YES), it judges that the theft was broken down or carried out and it has applied, an IMOB function is set up (S48), and an engine is stopped. Moreover, when it is judged that CW demand is omitted 5 times (S47:NO), a return is carried out to S45 and CW demand is again performed to the IMOB unit 44.

[0085] When it is judged on the other hand that there is a reply of an IMOB functional release command and CW (S46:YES), Although it judges, and the return of whether CW is registered into EEPROM50 which stored CW in RAM51 by the side of the EGI unit 49 temporarily (S49), progressed to S50 of drawing 14, and was built in the EGI unit 49 is carried out to S48 when not registered (S50:NO) It judges whether CW stored in (S50:YES) and RAM51 when registered is in agreement with CW registered into EEPROM50 (S51). When it is judged that it is in agreement (S51:YES), an IMOB function is canceled (S52) and the usual EGI control is performed. Moreover, when it is judged that it is not in agreement (S51:NO), a return is carried out to S47.

[0086] By the way, the IMOB control means of the IMOB unit 44 and the EGI unit 49 constituted from a gestalt of this operation by the IMOB unit 44 and the EGI unit 49 although it is explanation of operation and the S/L control unit 30 in case the flow chart shown in explanatory drawing of drawing 8 and drawing 9 - drawing 14 does not perform cooperation operation with the S/L control unit 30 are constituted so that it may operate based on ID information from the same transponder 41 (claim 1). For this reason, (a claim 2) and the S/L control unit 30 are able to operate [ that IMOB control means also operate based on ID information from the transponder 41 obtained through the door key cylinder 1, or ] based on ID information from the transponder 41 obtained through the ignition key cylinder (claim 3).

[0087] And IMOB control means have changed the propriety judging mode of engine starting according to the control state in the S/L control unit 30 (claim 4), for example, are S45 of drawing 13. Even if the EGI unit 49 performs CW demand for ID collating to the IMOB unit 44, when there is no reply, in the state of U/L As opposed to repeating CW demand 5 times, as shown in S47 in the state of S/L As this is reduced to 2 times, or an IMOB function is set up immediately, without performing CW demand for ID collating and starting of an engine is forbidden in the state of (a claim 5) or S/L (claim 6), facilitation of processing is attained raising crime prevention nature.

[0088] On the other hand, the S/L control unit 30 side also responds to the propriety judging result of engine starting in IMOB control means. When the S/L mechanism is controlled (claim 7), for example, IMOB control means judge with engine starting being impossible When the S/L control unit 30 operated the S/L mechanism, it changes into an S/L state or (a claim 8) and IMOB control means judge with engine starting being possible, an S/L state is canceled, it changes into an U/L state (claim 9), or the S/L control unit 30 is carrying out.

[0089] Drawing 15 is a flow chart which shows the processing corresponding to a claim 5. First, if it is not in an S/L state (S61:NO), although it judges whether it is in an S/L state (S61), and the number of times of ID collating will be set as 5 times (S62) and IMOBID judging processing will be performed (S64), if it is in an S/L state (S61:YES), the number of times of ID collating will be reduced to 2 times (S63), and IMOBID judging processing will be performed (S64). And when judged with regular ID, engine starting permission instructions, i.e., an IMOBID functional release command, are transmitted to the EGI unit 49 from (S65:YES) and the IMOBID unit 44 (S66), and when not judged with regular ID, engine starting prohibition instructions, i.e., an IMOBID functional setting command, are transmitted to the EGI unit 49 from (S65:NO) and the IMOBID unit 44 (S67).

[0090] Drawing 16 is a flow chart which shows the processing corresponding to a claim 6. First, it judges whether it is in an S/L state (S71), and if it is in an S/L state (S71:YES), prohibition of engine starting, i.e., an IMOBID functional setting command, will be immediately transmitted to the EGI unit 49 from the IMOBID unit 44, without performing ID collating (S72). On the other hand, if it is not in an S/L state (S71:NO), the number of times of ID collating will be set as 5 times (S73), and IMOBID judging processing will be performed (S74). And when judged with regular ID, engine starting permission instructions, i.e., an IMOBID functional release command, are transmitted to the EGI unit 49 from (S75:YES) and the IMOBID unit 44 (S76), and when not judged with regular ID, engine starting prohibition instructions, i.e., an IMOBID functional setting command, are transmitted to the EGI unit 49 from (S75:NO) and the IMOBID unit 44 (S72).

[0091] Drawing 17 is a flow chart which shows the processing corresponding to claims 8 and 9. First, IMOBID judging processing is performed (S81), when not judged with regular ID data, an S/L signal is outputted from (S82:NO) and the S/L control unit 30 (S83), and it changes into an S/L state, and engine starting prohibition instructions, i.e., an IMOBID functional setting command, are transmitted to the EGI unit 49 from the IMOBID unit 44 (S72).

[0092] On the other hand, when judged with regular ID data, engine starting permission instructions, i.e., an IMOBID functional release command, are transmitted to the EGI unit 49 from (S82:YES) and the IMOBID unit 44 (S85), an U/L signal is outputted from the S/L control unit 30 (S86), and an S/L state is canceled.

[0093] Drawing 18 is a flow chart which shows the processing which operates the actuator 34 which forbids rotation of the key inserted in the door key cylinder 1.

[0094] When the key was inserted in the door key cylinder 1 and ID data are [ ID judging is performed in the IMOBID unit 44 and ] in agreement, it judges with (S91:YES) and a regular key (S92), and the actuator 34 which forbids rotation of a key is not operated, and operation of the door key cylinder 1 by the key is enabled. It investigates whether on the other hand, when ID was not in agreement by ID judging, (S41:NO) and the number of times judging of predetermined were repeated (S94). When the number of times of a judgment does not reach the number of times of predetermined, a return is carried out to (S94:NO) and S91, when the number of times of a judgment reaches the number of times of predetermined, it judges with (S94:YES) and an inaccurate key (S95), and the actuator 34 which forbids rotation of a key is operated (S96).

[0095] Release operation of S/L and an IMOBID function can be simplified at the setting operation row of S/L and an IMOBID function, raising crime prevention nature by the above explanation, according to this invention, since cooperation with the S/L control unit 30 and IMOBID control means was aimed at, so that clearly.

[0096] Moreover, although the key which is not equipped with predetermined ID data is inserted in the door key cylinder 1 even if it has the key which is not equipped with the transponder by having formed the actuator 34 which forbids rotation of a key in the door key cylinder 1 and which was reproduced unjustly, or the transponder, it can become impossible to rotate a key and crime prevention nature can be raised remarkably.

[Translation done.]





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TECHNICAL FIELD

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[The technical field to which invention belongs] Especially this invention relates to the antitheft device of the vehicles equipped with the locking constrained mechanism which restrains the locking mechanism which locks a closed position and unlocks the door of vehicles in the locking state, the locking restricted control means which control this locking constrained mechanism, and the engine operation prohibition control means which judge the propriety of engine starting and forbid engine starting based on this judgment result about the antitheft device of vehicles.

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[Translation done.]

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**PRIOR ART**


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[Description of the Prior Art] The key cylinder is prepared in the door of vehicles, and if an inner lock knob is operated from the vehicle interior of a room, for example by operation to the lock position of the key plate inserted in this key cylinder while a door is locked by the closed position, it will unlock.

[0003] Therefore, the thing which, and a metal rod etc. is inserted from the crevice between a door and door glass, or is done even if a door etc. is in a locking state, [ that a theft person breaks door glass ] Since it becomes possible to operate the above-mentioned inner lock knob unjustly, and to unlock a locking mechanism and theft damage will be suffered, in order to prevent this, the door-lock equipment had the locking constrained mechanism which restrained the locking mechanism in the locking state and made impossible unlocking operation by the inner lock knob, and the locking restricted control means which control in this locking constrained mechanism by predetermined operation of the key plate inserted in the key cylinder is proposed variously.

[0004] Moreover, positive locking operation of opening-and-closing objects, such as a bonnet of the door at the time of separating from vehicles, a trunk lid, and an engine room, is detected. Although various things to which one of destruction of a door key cylinder or the above-mentioned opening-and-closing objects emitted the alarm immediately with the open eclipse are also proposed without being set by the alarm state after fixed time and performing predetermined reset action In order to reset the alarm of such a method, that a door key cylinder rotates in an unlocking position from a lock position by the unlocking operation using the regular key [ whether it detects and ] Or usually it is carried out by detecting rocking to the unlocking direction of the lock link of a door locking mechanism.

[0005] Therefore, the thing for which a theft person breaks door glass or a metal rod etc. is inserted from the crevice between a door and door glass, Operate the above-mentioned inner lock knob unjustly, and in the above-mentioned lock link, make it rock and the unjust method of unlocking to the unlocking direction is received. Since it was defenseless too, a key insertion detection means to detect whether the regular key was inserted in the door key cylinder is established. Only when it is detected that the regular key was inserted, while enabling rocking to the unlocking direction of a lock link, namely, canceling a locking restricted state The antitheft device of the vehicles which cope with an unjust unlocking act as reset an alarm, and enabled it to also prevent a key duplicate is also proposed (refer to JP,62-199555,A).

[0006] The transformer bonder which, on the other hand, transmits an ID cord peculiar to an ignition key is embedded, it has the engine operation prohibition control means which are transmitted from the above-mentioned transformer bonder when a key is inserted in an ignition key cylinder and which carry out ID-cord collating, judge the propriety of engine starting based on the collating, and forbid starting of an engine based on this judgment result, and the antitheft device of the vehicles which made engine starting impossible is also proposed by keys other than a regular ignition key.

[0007] In addition, on these specifications, henceforth, a locking restricted state is called "super lock" and it is called "S/L" for short. Moreover, the usual locking state is called "normal lock", it is called "N/L" for short, a unlocking state is called "unlocking", and it is called "U/L" for short. Furthermore, the above-mentioned engine operation prohibition

control and an engine operation prohibition function are called for short "IMOB control" and a "IMOB function", respectively.

[Translation done.]

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## EFFECT OF THE INVENTION

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[Effect of the Invention] According to invention indicated to the claim 1, since S/L control means and IMOB control means operate based on the information from the same transponder, information can be share-ized among both control means, and the control speed of the whole equipment can be raised.

[0017] According to invention indicated to the claim 2, since the propriety judging of engine starting is performed by the door key cylinder side, it becomes unnecessary to perform the above-mentioned propriety judging by the ignition key cylinder side, and operability improves.

[0018] If it has the regular ignition key, raising the crime prevention nature by S/L setup according to invention indicated to the claim 3 since S/L control means operate according to the propriety judging of engine starting by the ignition key cylinder side, S/L release of since there is no vehicle room becomes easy, and can raise the escape nature from the vehicle interior of a room.

[0019] According to invention indicated to the claim 4, since it is made for IMOB control means to change the propriety judging mode of engine starting according to the control state in S/L control means, the propriety judging of engine starting according to the S/L control demand can be performed.

[0020] According to invention indicated to the claim 5, in an S/L state, since IMOB control means are decreasing the number of times of a propriety judging of engine starting as compared with an U/L state, they can make promptly judgment that engine starting is impossible, and can raise crime prevention nature at the time of S/L.

[0021] According to invention indicated to the claim 6, since engine starting is forbidden without IMOB control means performing the propriety judging of engine starting at the time of S/L, the load of IMOB control means is mitigable.

[0022] According to invention indicated to the claim 7, since S/L control means control an S/L mechanism according to the propriety judging result of engine starting in IMOB control means, a crime prevention performance can be raised.

[0023] According to invention indicated to the claim 8, since S/L control means operate an S/L mechanism when IMOB control means judge with engine starting being impossible, a theft person can be confined in the vehicle interior of a room.

[0024] According to invention indicated to the claim 9, since S/L control means change an S/L mechanism into an U/L state when IMOB control means judge with engine starting being possible, the inside of engine performance can raise the escape nature from the vehicle interior of a room.

[0025]

[Embodiments of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing.

[0026] Drawing 1 is the system block view of the gestalt of 1 operation of the antitheft device of the vehicles by this invention. The antitheft device of the gestalt of this operation is equipped with the S/L control unit 30 which controls the actuator unit 15 which operates a door-lock mechanism, and the IMOB unit 44 which judges the propriety of engine starting with the EGI unit 49 which performs engine control.

[0027] The ignition key cylinder prepared in the door key cylinder and driver seat which were attached in the door is equipped with the antennas 32 and 42 which receive the signal from a

transponder 41, respectively while the common ignition key which embedded the transponder 41 is inserted and operates. The signal incorporated by antennas 32 and 42 is amplified with amplifier 33 and 43, respectively, and is inputted into the S/L unit 30 and the IMOB unit 44, respectively.

[0028] The antenna 32 formed in the door key cylinder is an induction coil antenna which voltage generates by inserting an ignition key, and the antenna 42 formed in the ignition key cylinder is an induction coil antenna which is interlocked with ON-OFF of an ignition switch and operates.

[0029] The signal with which the S/L control unit 30 expresses an S/L state, the present locking state, i.e., N/L state, of a door, or an U/L state, While transmitting the voltage value which occurred by having inserted the ignition key in the door key cylinder, and was amplified with amplifier 33 to the IMOB unit 44 through the communication line 35 When it is judged by the IMOB unit 44 that the key inserted in the door key cylinder does not have predetermined ID data, it receives the information from the IMOB unit 44, and operates the actuator 34 which forbids rotation of a key. Moreover, the S/L unit 30 carries out predetermined period (for example, 3 seconds) lighting of the indicator 25 formed in the vehicle interior of a room, when it changes into an S/L state. The dc-battery power supply (+B) 36 is connected to the S/L unit 30 and the actuator 34 for key rotation prohibition.

[0030] The IMOB unit 44 is a controller which forbids engine starting by EGI (electronic fuel injection) for theft prevention, and when a driver turns OFF an ignition switch at the time of vehicles alighting, it is set automatically.

[0031] EEPROM45 in which the IMOB unit 44 stores data beforehand, RAM46 which stores data temporarily in transfer of data with the EGI unit 49, The timer 47 which sends as data the timing of transfer of the data stored in RAM46, It consists of CPUs48 which control transfer of data with the EGI unit 49 based on the timing information from a timer 47, and exchange information through the communication line 35 between the S/L units 30.

[0032] Moreover, the IMOB unit 44 transmits the content of the above-mentioned control signal through the communication line 35 also to the S/L unit 30 while ID data are given from a transponder 41 and it transmits a predetermined control signal to the EGI unit 49 based on the voltage value amplified with amplifier 43 while being able to give the ON-OFF information on an ignition switch based on the dc-battery power supply (+B) 36 and the ignition switch power supply (IG1) 55.

[0033] In addition, since it connects with the dc-battery power supply 36, even if the IMOB unit 44 turns OFF an ignition switch and stops an engine, a power supply is supplied and it holds the standby state. Moreover, it connects with the indicator 56 formed in the vehicle interior of a room, and blink and putting out lights are controlled by ID data transmitted from a transponder 41.

[0034] EEPROM50 which the EGI unit 49 is a controller which controls a rotational frequency, fuel oil consumption, etc. of an engine, and stores data beforehand like the IMOB unit 44, RAM51 which stores data temporarily in transfer of data with the IMOB unit 44, It consists of a timer 52 which sends as data the timing of transfer of the data stored in RAM51, and CPU53 which controls transfer of data with the IMOB unit 44 based on the timing information from a timer 52.

[0035] Moreover, the EGI unit 49 receives a predetermined control signal from the IMOB unit 44, and controls a starter, fuel oil consumption, etc. based on the signal. Since this EGI unit 49 operates with the switch power supply 55 which is interlocked with ON-OFF of an ignition switch and operates unlike the case of the IMOB unit 44, a power supply will be shut off when an ignition switch is turned OFF.

[0036] The schematic diagram of the circumference of the key cylinder switch formed in the key cylinder in which the block diagram showing the outline composition of the door-lock equipment with which drawing 2 is controlled by the S/L control unit 30, and drawing 3 are attached in the door by the side of a driver seat, and drawing 4 are the schematic diagrams of the door-lock equipment attached in the door by the side of a driver seat.

[0037] In the key cylinder 1 of the door by the side of the driver seat shown in drawing 2 It

adds to the antenna 32 which receives ID information from a transponder 41 mentioned above. Key cylinder switch SW1 which has composition as shown in drawing 3 It is prepared. the door key cylinder 1 By the ignition key (illustration is omitted) inserted in this, it is the key cylinder switch SW1. It rotates in the lock position B or the unlocking position C from a center valve position A with traveling contact 4a. By connecting arm 1a ( drawing 4 ) attached in the key cylinder 1 with the lock link 3 shown in drawing 4 through the rod 2, this lock link 3 In connection with rotating in a lock position in connection with the key cylinder 1 rotating in a lock position (B position), and the key cylinder 1 rotating in an unlocking position (C position), it rotates in an unlocking position.

[0038] Key cylinder switch SW1 Rotation shaft 5a supported to revolve by the substrate 5 so that it might rotate to the key cylinder 1 and one as shown in drawing 3 , It has movable contact piece 4a fixed to this rotation shaft 5a, and the circular fixed contact pieces 4b and 4c and 4d of grounding contact pieces fixed on the substrate 5, and the end of movable contact piece 4a is always in slide contact with 4d of grounding contact piece points. One fixed contact piece 4b contacts the other end of movable contact piece 4a, when the key cylinder 1 rotates in the lock position B, and fixed contact piece 4c of another side contacts the other end of movable contact piece 4a, when the key cylinder 1 rotates in the unlocking position C.

[0039] Since direct and fixed contact piece 4b is connected to the terminal 20 of the S/L control unit 30 shown in drawing 5 , respectively through Resistance R, and fixed contact piece 4c is not connected to a terminal 20 at all when movable contact piece 4a is in the center valve position shown in drawing 3 , although the terminal 20 is maintaining the predetermined voltage value Since it is grounded through Resistance R when movable contact piece 4a contacts fixed contact piece 4b by the side of a lock When the 1st voltage value which hits a lock signal occurs for a terminal 20 and movable contact piece 4a contacts fixed contact piece 4c by the side of unlocking, the 2nd voltage value which hits an unlocking signal occurs for a terminal by being grounded.

[0040] The door-lock equipment shown in drawing 4 has the latch main part 6 which equipped the rockable with the above-mentioned lock link 3 and the release link 7, the outer handle 10 and the inner handle 11 of a door are connected with the ends of the release link 7 respectively through rods 8 and 9, and the release link 7 is coordinated with the claw lever (release member) 13 through the wide swing mechanism 12 established in the latch main part 6. When a lock position has the lock link 3, the wide swing mechanism 12 intercepts connection on the release link 7 and the claw lever 13, and makes the outer handle 10 and the inner handle 11 swing wide.

[0041] Since the mode of each element which constitutes these door-locks equipment of operation is the same as that of existing door-lock equipment, the detailed explanation is omitted.

[0042] 15 is an actuator unit and this actuator unit builds in the S/L actuator 17, the wide swing mechanism 18 driven with this S/L actuator 17, and the power door-lock actuator 21. Moreover, this actuator unit 15 is equipped with the lever 22 connected with the inner lock knob 19 through rod 14a, and the lever 23 connected with the lock link 3 through rod 14b respectively free [ rocking ], and the above-mentioned wide swing mechanism 18 is infixed between shaft 22a which rotates by the lever 22, and shaft 23a which rotates by the lever 23.

[0043] This wide swing mechanism 18 intercepts the connection which minded connection between the lock links 3 and the inner lock knobs 19 in a lock position, i.e., rod 14a, levers 22 and 23, and rod 14b in the state of S/L, even if it operates the inner lock knob 19, it makes this swing wide, and it makes impossible lock release operation by the inner lock knob 19.

[0044] Whether a lock position has the lock link 3 of the door of a driver seat or it is in an unlocking position are the lock link switch SW2 which operates corresponding to the movement of this lock link 3. Although detected, it is this switch SW2. It is prepared in the actuator unit 15. Moreover, change SUICHI SW3 which changes a motor circuit with operation of this actuator unit 15 like the after-mentioned into the actuator unit 15 It is prepared.

[0045] Moreover, the motor which the power door-lock actuators 21 formed in the actuator unit 15 change [ motor ] other doors into a lock state all at once by door-lock operation of the key cylinder 1 of the door of a driver seat, and operates this power door-lock actuator 21 can make the motor which operates the S/L actuator 17 serve a double purpose.

[0046] In addition, in drawing 4 , although the S/L actuator 17, the wide swing mechanism 18, and the power door-lock actuator 21 are not illustrated, since it is indicated by JP,62-199555,A etc., for example, detailed explanation is omitted about the wide swing mechanism which accompanies an S/L actuator and \*\*.

[0047] Drawing 5 is drawing showing the composition of the electrical circuit of door-lock equipment.

[0048] the microcomputer 31 carried on the S/L control unit 30 -- the above-mentioned key cylinder switch SW1 And lock link switch SW2 from -- the input port into which a signal is inputted -- in addition, the ignition key switch SW4, the key loess switch SW5, and (switch which will be turned on on if an ignition key is inserted in an ignition key cylinder) a door switch SW6 from -- the signal is equipped with the input port inputted, respectively

[0049] Moreover, the microcomputer 31 is equipped with the input port into which the signal from the transponder 41 received with the antenna 32 formed in the door key cylinder 1 is amplified and inputted with amplifier 33.

[0050] Furthermore, the microcomputer 31 is equipped with the output port which outputs an U/L command signal, an N/L command signal, and an S/L command signal, respectively, the output port which operates the indicator 25 which indicates that it changed into the S/L state, the output port which transmits information to the IMOB unit 44, and the output port which drives the actuator 34 which forbids rotation of the key inserted in the door key cylinder 1.

[0051] Furthermore, relay RL1 excited by the U/L command signal outputted to the S/L control unit 30 from a microcomputer 31 Relay RL2 excited by the N/L command signal The relay RL3 excited by the S/L command signal is formed. These three relay RL1 -RL(s)3 Although the output terminal of the stationary contact a connected to the battery power supply 36, the grounded stationary contact b, and the S/L control unit 30 is equipped with the traveling contact c connected, respectively and the traveling contact c is connected to the stationary contact b of the earth side in the state of un-exciting, if excited, a traveling contact c will be connected to the stationary contact a by the side of a battery power supply.

[0052] Moreover, changeover switch SW3 changed with operation of the actuator 17 of the S/L mechanism 16 It has the traveling contact c connected to one terminal of the stationary contact a connected to the N/L output terminal in the U/L state of illustration, the stationary contact b connected to the S/L output terminal, and Motor M. The other-end child of Motor M is connected to the U/L output terminal.

[0053] By rotating the ignition key inserted in the door key cylinder 1 from a center valve position A to the lock position B in the gestalt of this operation, an N/L command signal is outputted from a microcomputer 31, and it is relay RL2. It is excited and supply voltage is impressed to an N/L output terminal. Moreover, by repeating a key plate from a center valve position A twice to the lock position B, and rotating in the setup time (for example, for 3 seconds), an S/L command signal is outputted from a microcomputer 31, and it is relay RL3. It is excited and supply voltage is impressed to an S/L output terminal. Furthermore, by rotating a key plate from a center valve position A to the unlocking position C, an U/L command signal is outputted from a microcomputer 31, and it is relay RL1. It is excited and supply voltage is impressed to an U/L output terminal.

[0054] Next, changeover switch SW3 in the case of shifting to other states from each state of U/L, N/L, and S/L Operation is explained.

[0055] (1) From an U/L state, from the U/L state shown in drawing 5 to an N/L state, an N/L command signal is outputted from a microcomputer 31, and it is relay RL2. When excited, current is an N/L output terminal to the switch SW3. A stationary contact a, Motor M, an U/L output terminal, and relay RL1 Only a predetermined short time flows to the earth side

through a stationary contact b. While predetermined carries out [ Motor M ] short-time rotation for example, in the right direction, the power door-lock actuator 21 drives, and all doors are made a lock state by this and being in an N/L state by it, the traveling contact c of a switch SW3 is changed to a stationary-contact b side.

[0056] (2) A microcomputer 31 to an S/L command signal is outputted to an S/L state from the above-mentioned N/L state from an N/L state, and it is relay RL3. When excited, current is an S/L output terminal to the switch SW3. A stationary contact b, Motor M, an U/L output terminal, and relay RL1 Only a predetermined short time flows to the earth side through a stationary contact b. Motor M rotates in the right direction to a short-time predetermined pan, the S/L actuator 17 drives, the wide swing mechanism 18 operates, it will be in an S/L state, and predetermined-time lighting of the indicator 25 will be carried out by this.

[0057] (3) A microcomputer 31 to an U/L command signal is outputted to an U/L state from the above-mentioned N/L state from an N/L state, and it is relay RL1. When excited, current is an U/L output terminal to Motor M and a switch SW3. A stationary contact b, an S/L output terminal, and relay RL3 Only a predetermined short time flows to the earth side through a stationary contact b. While predetermined carries out [ Motor M ] short-time rotation at an opposite direction, the power door-lock actuator 21 drives in the release direction, and the lock of all doors is canceled by this and being in an U/L state by it, the traveling contact c of a switch SW3 returns to a stationary-contact a side.

[0058] (4) A microcomputer 31 to an U/L command signal is outputted to an U/L state from the above-mentioned S/L state from an S/L state, and it is relay RL1. When excited, current is an U/L output terminal to Motor M and a switch SW3. A stationary contact b, an S/L output terminal, and relay RL3 It flows to the earth side rather than the above through a stationary contact b for a long time. Motor M rotates to an opposite direction for a long time [ predetermined ], the S/L actuator 17 drives in the release direction, and the wide swing mechanism 18 is made a non-actuation state by this. Moreover, while the power door-lock actuator 21 drives in the release direction, and the lock of all doors is canceled and being in an U/L state, it is a switch SW3. A traveling contact c returns to a stationary-contact a side.

[0059] Drawing 6 is a timing chart which shows an example of operation when shifting to N/L and an S/L state from an U/L state.

[0060] a time --  $t_1$  -- setting -- key cylinder switch SW1 While the N/L signal output which has the predetermined pulse width  $T_1$  by the bird clapper occurs in ON, and the power door-lock actuator 21 ( drawing 2 ) operates to it and being in an N/L state at a lock side, the start edge E1 of this N/L signal is answered, and the timer which makes a setting time a predetermined time  $T_3$  (for example, 3 seconds) is set. And it sets to  $t_2$  the time of being, before the setting time  $T_3$  of this timer passes. An S/L signal output occurs by operating again the key inserted in the door key cylinder 1 in a lock position, and generating an N/L signal output again. While the S/L actuator 17 ( drawing 2 ) operates and shifting to an S/L state by this, the indicator 25 which indicates that it changed into the S/L state is turned on between the setup times  $T_4$  (for example, 3 seconds). Moreover, it sets in an N/L state and the S/L state, and is the key cylinder switch SW1. If it is operated in an unlocking position, the U/L signal output which has the predetermined pulse width  $T_1$  will occur, and it will return to an U/L state.

[0061] In addition, since there is also a possibility that the S/L actuator 17 may malfunction when it shifts to an S/L state extremely for a short time, after changing into the N/L state The OFF time of time  $T_2$  is prepared after the ON time  $T_1$  of an N/L signal, and even if it is the case where multiple-times operation of the key is carried out extremely for a short time, the OFF time (ON prohibition time) of  $T_2$  intervenes at least between the pulses which an N/L signal output adjoins. According to the performance of the S/L actuator 17, it decides on time  $T_1$  and  $T_2$ .

[0062] Thus, since it will shift to an S/L state if the key inserted in the door key cylinder 1 is operated in the setting time  $T_3$  of a timer at a predetermined number, for example, a 2 times lock position, it can prevent shifting to an S/L state against the volition of a driver.

[0063] In addition, you may make it the above-mentioned timer start a time check from the



fall edge E2 of an N/L signal. Moreover, shortly after operating it contrary to this in the number-of-times (for example, 3 times) lock position beyond the predetermined number although an S/L state may be made to be held even if more than a predetermined number ( drawing 6 2 times) operates a key in a lock position how many times if it is in the setting time T3 of a timer, you may make it return to an U/L state. Then, when it has changed into an S/L state accidentally, an S/L state can be canceled immediately.

[0064] Or after the key plate was operated last time in the lock position, when it is again operated in a predetermined time regardless of the number of times of operation of a key plate in a lock position, you may make it generate an S/L signal output.

[0065] Drawing 7 is a flow chart which shows the manipulation routine corresponding to drawing 6 roughly. S expresses each step.

[0066] First, key cylinder switch SW1 It judges whether it changed to the lock (S1). When it changes to a lock, (S1:YES) and T3 timer are started (S2). while the number of times which changed to the lock of the key cylinder switch SW1 is under a predetermined number (it NO(s) S3: --) When a predetermined number is 2 times and 1 time and a predetermined number are 3 times, they are 1 time and 2 times, and the key cylinder switch SW1. The counter which counts the number of times which changed to the lock is incremented, and (S4) and an N/L signal are outputted (S5).

[0067] Key cylinder switch SW1 If it is within a time [ to which (S3:YES) above-mentioned T3 timer is operating ] when judged with having changed to the lock more than the predetermined number (S6:YES), an N/L signal and an S/L signal will be outputted simultaneously (S7, S8).

[0068] Next, with reference to drawing 8 , the transceiver procedure of the data between a transponder 41, the IMOB1 unit 44, and the EGI unit 49 is explained.

[0069] Drawing 8 is drawing explaining the judgment procedure of ID data of the transponder 41 which has a certain peculiar ID data. In addition, in the following explanation, the ID cord showing the peculiar code of an ignition key is transmitted to the IMOB1 unit 44 from a transponder 41, and the password called codeword (it is hereafter called "CW" for short) is transmitted to the EGI unit 49 from the IMOB1 unit 44. Moreover, CW is a code registered into the IMOB1 unit 44 and the EGI unit 49 one piece at a time, respectively, and the same CW is registered into each unit.

[0070] In drawing 8 , the ignition key equipped with the transponder 41 is inserted in the keyhole of an ignition key cylinder, and it is the ignition switch SW4. If it is made to rotate and an engine is operated, the EGI unit 49 advances CW demand to the IMOB1 unit 44, and in response to it, the IMOB1 unit 44 will advance ID request to a transponder 41, and it will transmit ID signal used as the trigger signal of the IMOB1 unit 44 to the IMOB1 unit 44 from a transponder 41.

[0071] In the IMOB1 unit 44, the ID cord of the transmitted transponder 41 is temporarily stored in RAM46 in a unit 44. Then, the ID cord registered into EEPROM45 in the IMOB1 unit 44 and the ID cord transmitted from the transponder 41 are collated in CPU48. If the collating result of the IMOB1 unit 44 of an ID cord corresponds, it will transmit an engine performance enabling signal (IMOB1 functional release command) and CW to the EGI unit 49. When inharmonious, an engine performance inhibiting signal (IMOB1 functional setting command) is transmitted, and the EGI unit 49 stops an engine in response to the signal.

[0072] If in agreement, it will store CW from the IMOB1 unit 44 in RAM51, and the EGI unit 49 collates CW from the IMOB1 unit 44, and CW registered into EEPROM50 in the EGI unit 49, and if not in agreement, it will stop [ an engine is continued and it operates, and ] an engine.

[0073] Drawing 9 - drawing 12 are flow charts which show the judgment procedure of the ID cord by the side of the IMOB1 unit 44.

[0074] It is the ignition switch SW4 by the ignition key which processing was started as shown in drawing 9 - drawing 11 , and built in the transponder 41. If it rotates to ON position, it will be in the state waiting for an IMOB1 functional release judging, and will become the mode which permits engine starting temporarily. Then, it is the ignition switch SW4 by the ignition key with a built-in transponder. It rotates to a starter position and judges whether the engine started or not (S11). When it is judged that it progresses to S12 and does not start when an



transmitted to the EGI unit 49 (S33), and a warning lamp is switched off (S34).

[0081] On the other hand, when it is judged that CW is not in agreement (S32:NO), after transmitting an IMOB function setting command to the EGI unit 49 by S35, a return is carried out to S11 of drawing 9. Moreover, when it is judged that there is no CW input by predetermined operation, it progresses to (S30:NO) and S35, and an IMOB function setting command is transmitted to the EGI unit 49.

[0082] Next, the judgment procedure of CW by the side of the EGI unit 49 is explained with reference to the flow chart of drawing 13 and drawing 14.

[0083] In drawing 13, if processing is started, the number of times of CW demand to the release judging waiting and the IMOB unit 44 of an IMOB function will start the count between 500 mses from Ignition ON with a timer by the zero state (S41). And when it judges whether the command write-in [ additional ] was received (S42) and the command write-in [ additional ] is not received (S42:NO), it progresses to S43, and although the additional writing of an ID cord is performed when the command write-in [ additional ] is received (S42:YES), it \*\*\*\*\* about the contents of the additional writing of this ID cord.

[0084] At S43, an engine speed is 500rpm as predetermined conditions. It judges whether the above and voltage are more than 10V. And when it judges whether the count of the 500 mses started by S41 was completed when predetermined conditions were fulfilled (S43:YES) (S44) and a count is completed (S44:YES), CW demand is given from the EGI unit 49 to the IMOB unit 44 (S45). Then, it judges whether there is any reply of an IMOB function release command and CW from the IMOB unit 44 to the EGI unit 49 (S46). When it is judged that there is a reply of an IMOB function release command and CW (S46:YES), Although it progressed to S49, when it is judged that there is no reply (S46:NO), it judges whether CW demand has already been performed 5 times to the IMOB unit 44 (S47). When it is judged that CW demand is performed 5 times (S47:YES), it judges that the theft was broken down or carried out and it has applied, an IMOB function is set up (S48), and an engine is stopped. Moreover, when it is judged that CW demand is omitted 5 times (S47:NO), a return is carried out to S45 and CW demand is again performed to the IMOB unit 44.

[0085] When it is judged on the other hand that there is a reply of an IMOB function release command and CW (S46:YES), Although it judges, and the return of whether CW is registered into EEPROM50 which stored CW in RAM51 by the side of the EGI unit 49 temporarily (S49), progressed to S50 of drawing 14, and was built in the EGI unit 49 is carried out to S48 when not registered (S50:NO) It judges whether CW stored in (S50:YES) and RAM51 when registered is in agreement with CW registered into EEPROM50 (S51). When it is judged that it is in agreement (S51:YES), an IMOB function is canceled (S52) and the usual EGI control is performed. Moreover, when it is judged that it is not in agreement (S51:NO), a return is carried out to S47.

[0086] By the way, the IMOB control means of the IMOB unit 44 and the EGI unit 49 constituted from a form of this operation by the IMOB unit 44 and the EGI unit 49 although it is explanation of operation and the S/L control unit 30 in case the flow chart shown in explanatory drawing of drawing 8 and drawing 9 - drawing 14 does not perform cooperation operation with the S/L control unit 30 are constituted so that it may operate based on ID information from the same transponder 41 (claim 1). For this reason, (a claim 2) and the S/L control unit 30 are able to operate [ that IMOB control means also operate based on ID information from the transponder 41 obtained through the door key cylinder 1, or ] based on ID information from the transponder 41 obtained through the ignition key cylinder (claim 3).

[0087] And IMOB control means have changed the propriety judging mode of engine starting according to the control state in the S/L control unit 30 (claim 4), for example, are S45 of drawing 13. Even if the EGI unit 49 performs CW demand for ID collating to the IMOB unit 44, when there is no reply, in the state of U/L As opposed to repeating CW demand 5 times, as shown in S47 in the state of S/L As this is reduced to 2 times, or an IMOB function is set up immediately, without performing CW demand for ID collating and starting of an engine is forbidden in the state of (a claim 5) or S/L (claim 6), facilitation of processing is attained raising crime prevention nature.

[0088] On the other hand, the S/L control unit 30 side also responds to the propriety judging result of engine starting in IMOB control means. When the S/L mechanism is controlled (claim 7), for example, IMOB control means judge with engine starting being impossible. When the S/L control unit 30 operated the S/L mechanism, it changes into an S/L state or (a claim 8) and IMOB control means judge with engine starting being possible, an S/L state is canceled, it changes into an U/L state (claim 9), or the S/L control unit 30 is carrying out.

[0089] Drawing 15 is a flow chart which shows the processing corresponding to a claim 5. First, if it is not in an S/L state (S61:NO), although it judges whether it is in an S/L state (S61), and the number of times of ID collating will be set as 5 times (S62) and IMOB ID judging processing will be performed (S64), if it is in an S/L state (S61:YES), the number of times of ID collating will be reduced to 2 times (S63), and IMOB ID judging processing will be performed (S64). And when judged with regular ID, engine starting permission instructions, i.e., an IMOB functional release command, are transmitted to the EGI unit 49 from (S65:YES) and the IMOB unit 44 (S66), and when not judged with regular ID, engine starting prohibition instructions, i.e., an IMOB functional setting command, are transmitted to the EGI unit 49 from (S65:NO) and the IMOB unit 44 (S67).

[0090] Drawing 16 is a flow chart which shows the processing corresponding to a claim 6. First, it judges whether it is in an S/L state (S71), and if it is in an S/L state (S71:YES), prohibition of engine starting, i.e., an IMOB functional setting command, will be immediately transmitted to the EGI unit 49 from the IMOB unit 44, without performing ID collating (S72). On the other hand, if it is not in an S/L state (S71:NO), the number of times of ID collating will be set as 5 times (S73), and IMOB ID judging processing will be performed (S74). And when judged with regular ID, engine starting permission instructions, i.e., an IMOB functional release command, are transmitted to the EGI unit 49 from (S75:YES) and the IMOB unit 44 (S76), and when not judged with regular ID, engine starting prohibition instructions, i.e., an IMOB functional setting command, are transmitted to the EGI unit 49 from (S75:NO) and the IMOB unit 44 (S72).

[0091] Drawing 17 is a flow chart which shows the processing corresponding to claims 8 and 9. First, IMOB ID judging processing is performed (S81), when not judged with regular ID data, an S/L signal is outputted from (S82:NO) and the S/L control unit 30 (S83), and it changes into an S/L state, and engine starting prohibition instructions, i.e., an IMOB functional setting command, are transmitted to the EGI unit 49 from the IMOB unit 44 (S72).

[0092] On the other hand, when judged with regular ID data, engine starting permission instructions, i.e., an IMOB functional release command, are transmitted to the EGI unit 49 from (S82:YES) and the IMOB unit 44 (S85), an U/L signal is outputted from the S/L control unit 30 (S86), and an S/L state is canceled.

[0093] Drawing 18 is a flow chart which shows the processing which operates the actuator 34 which forbids rotation of the key inserted in the door key cylinder 1.

[0094] When the key was inserted in the door key cylinder 1 and ID data are [ ID judging is performed in the IMOB unit 44 and ] in agreement, it judges with (S91:YES) and a regular key (S92), and the actuator 34 which forbids rotation of a key is not operated, and operation of the door key cylinder 1 by the key is enabled. It investigates whether on the other hand, when ID was not in agreement by ID judging, (S41:NO) and the number-of-times judging of predetermined were repeated (S94). When the number of times of a judgment does not reach the number of times of predetermined, a return is carried out to (S94:NO) and S91, when the number of times of a judgment reaches the number of times of predetermined, it judges with (S94:YES) and an inaccurate key (S95), and the actuator 34 which forbids rotation of a key is operated (S96).

[0095] Release operation of S/L and an IMOB function can be simplified at the setting operation row of S/L and an IMOB function, raising crime prevention nature by the above explanation, according to this invention, since cooperation with the S/L control unit 30 and IMOB control means was aimed at, so that clearly.

[0096] Moreover, although the key which is not equipped with predetermined ID data is inserted in the door key cylinder 1 even if it has the key which is not equipped with the

transponder by having formed the actuator 34 which forbids rotation of a key in the door key cylinder 1 and which was reproduced unjustly, or the transponder, it can become impossible to rotate a key and crime prevention nature can be raised remarkably.

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[Translation done.]

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] By the way, if it sees from a viewpoint of crime prevention nature, although it will be that it is desirable to have the both sides of S/L control means and IMOB I control means for example, when parking vehicles and separating from vehicles When it returns to the vehicles which had to perform the both sides of S/L setting operation and IMOB I functional setting operation, and were parked, in order to have to perform the both sides of S/L release operation and IMOB I functional release operation, there was a problem that operation became complicated.

[0009] It aims at providing the setting operation row of S/L and an IMOB I function with the antitheft device of the vehicles which simplified release operation of S/L and an IMOB I function, this invention aiming at cooperation with S/L control means and IMOB I control means in view of an above-mentioned situation, and raising crime prevention nature.

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[Translation done.]

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**MEANS**


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[Means for Solving the Problem] The S/L mechanism which restrains the locking mechanism which invention indicated to the claim 1 locks the door of vehicles at a closed position, and is unlocked in the locking state, In the antitheft device of the vehicles equipped with the S/L control means which control this S/L mechanism, and the IMOB control means which judge the propriety of engine starting and forbid starting of an engine based on this judgment result It is characterized by the above-mentioned S/L control means and the above-mentioned IMOB control means operating based on the information from the same transponder.

[0011] In this case, you may make it the above-mentioned IMOB control means operate based on the information from the transponder obtained through the door key cylinder, or may make it operate based on the information from a transponder that the above-mentioned S/L control means were obtained through the ignition key cylinder (claim 2) (claim 3).

[0012] The S/L mechanism which restrains the locking mechanism which invention indicated to the claim 4 locks the door of vehicles at a closed position, and is unlocked in the locking state, In the antitheft device of the vehicles equipped with the S/L control means which control this S/L mechanism, and the IMOB control means which judge the propriety of engine starting and forbid starting of an engine based on this judgment result The above-mentioned IMOB control means are characterized by changing the propriety judging mode of engine starting according to the control state in S/L control means.

[0013] In this case, you may make it forbid engine starting, without making it the above-mentioned IMOB control means decrease the number of times of a propriety judging of engine starting in an S/L state as compared with an U/L state, or the above-mentioned IMOB control means performing the propriety judging of engine starting in an S/L state (claim 5) (claim 6).

[0014] The S/L mechanism which restrains the locking mechanism which invention indicated to the claim 7 locks the door of vehicles at a closed position, and is unlocked in the locking state, In the antitheft device of the vehicles equipped with the S/L control means which control this S/L mechanism, and the IMOB control means which judge the propriety of engine starting and forbid starting of an engine based on this judgment result It is characterized by controlling an S/L mechanism according to the propriety judging result of engine starting in the above-mentioned S/L control means and IMOB control means.

[0015] In this case, when S/L control means may be made to change an S/L mechanism into an S/L state when IMOB control means judge with engine starting being impossible, or IMOB control means judge with engine starting being possible (claim 8), S/L control means cancel an S/L state and may be made to change into an U/L state (claim 9).

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[Translation done.]

## \* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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## [Brief Description of the Drawings]

[Drawing 1] The system block view of the gestalt of 1 operation of the antitheft device of the vehicles by this invention

[Drawing 2] The block diagram showing the rough composition of the door-lock equipment in the antitheft device of the vehicles by this invention

[Drawing 3] The schematic diagram of the circumference of the key cylinder switch formed in the key cylinder of a door

[Drawing 4] Drawing showing the mechanical composition of door-lock equipment in a schematic diagram

[Drawing 5] The schematic diagram of the electrical circuit of S/L control means

[Drawing 6] The timing chart which shows the conditions which shift to an S/L state

[Drawing 7] The flow chart of the manipulation routine corresponding to drawing 6

[Drawing 8] Drawing explaining the ID cord of the transponder which has a certain peculiar ID data, and the judgment procedure of a codeword (CW)

[Drawing 9] The flow chart which shows a judgment and registration procedure of the ID cord by the side of an IMOB unit

[Drawing 10] The flow chart which shows a judgment and registration procedure of the ID cord by the side of an IMOB unit

[Drawing 11] The flow chart which shows a judgment and registration procedure of the ID cord by the side of an IMOB unit

[Drawing 12] The flow chart which shows the judgment procedure of the ID cord by the side of the IMOB unit at the time of ID-cord transmitting impotentia

[Drawing 13] The flow chart which shows the judgment procedure of the ID cord in an EGI unit

[Drawing 14] The flow chart which shows the judgment procedure of the ID cord in an EGI unit

[Drawing 15] The flow chart which shows the processing corresponding to a claim 5

[Drawing 16] The flow chart which shows the processing corresponding to a claim 6

[Drawing 17] The flow chart which shows the processing corresponding to claims 8 and 9

[Drawing 18] The flow chart which shows the processing which operates the actuator which forbids rotation of the key inserted in the door key cylinder

## [Description of Notations]

1 Door Key Cylinder

3 Lock Link

6 Latch Main Part

7 Release Link

15 Actuator Unit

16 S/L Mechanism

17 S/L Actuator

18 Wide Swing Mechanism

19 Inner Lock Knob

21 Power Door-Lock Actuator

25 Indicator



30 S/L Control Unit  
44 IMOB Unit  
49 EGI Unit

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[Translation done.]

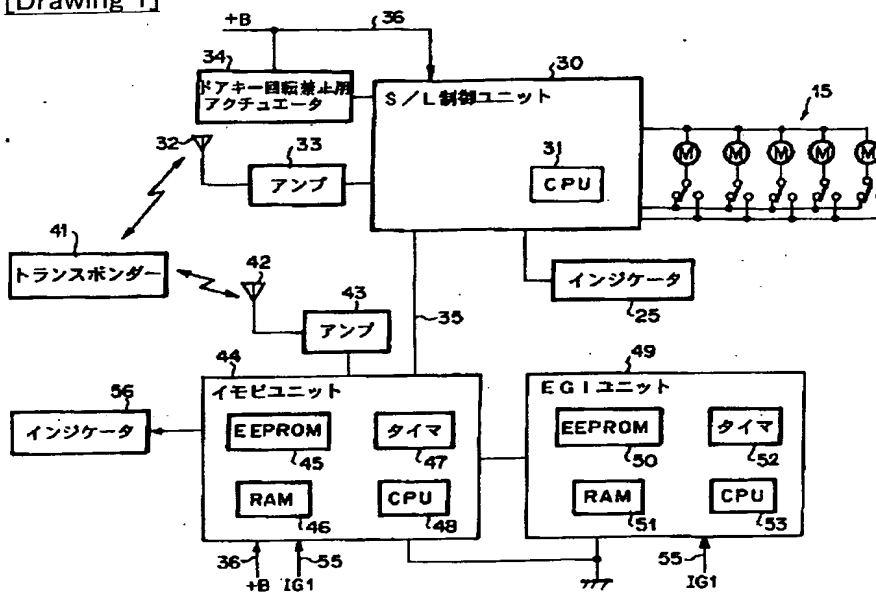
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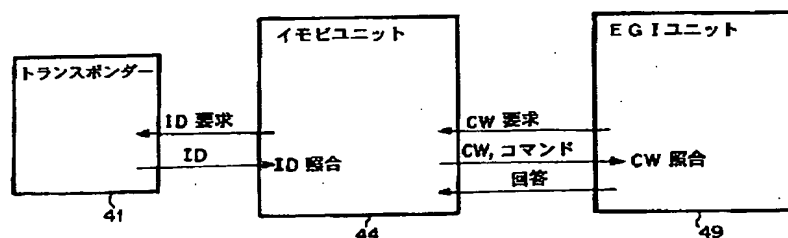
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## DRAWINGS

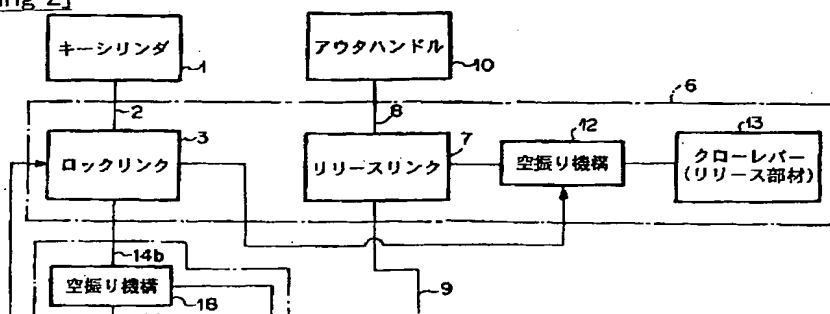
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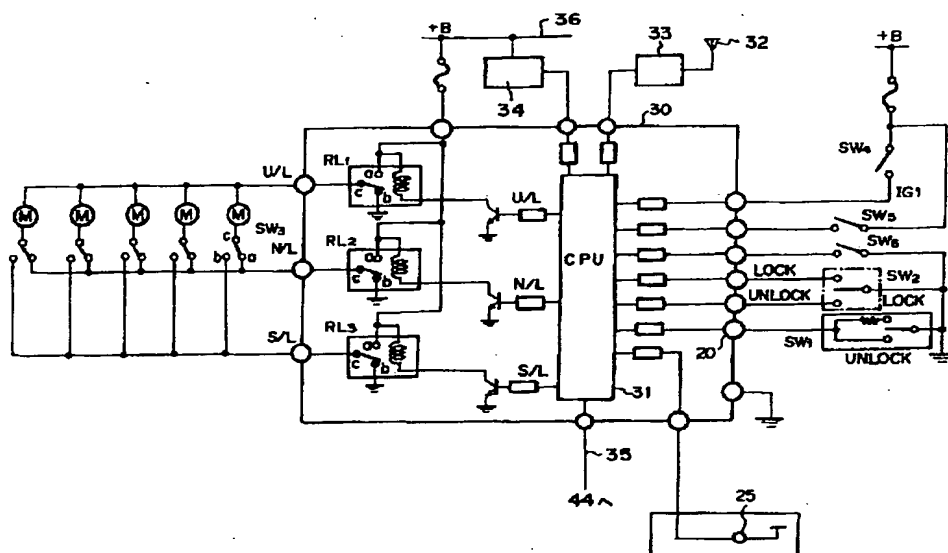
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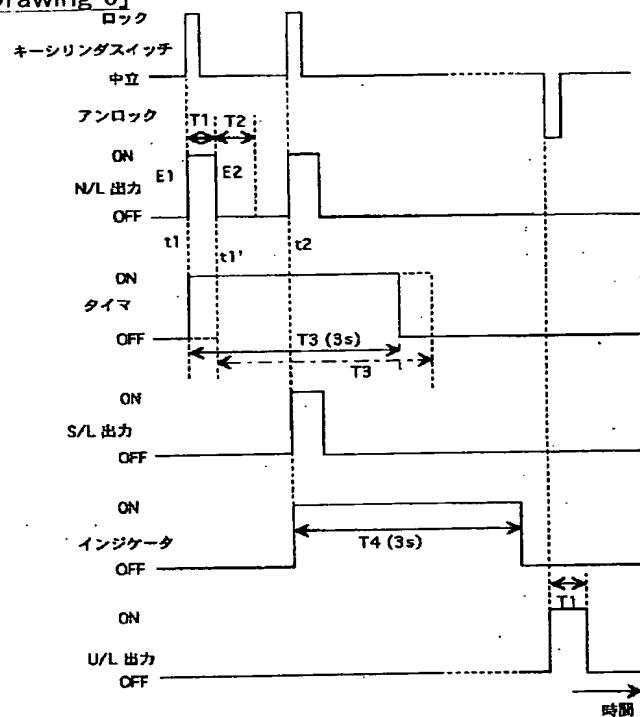
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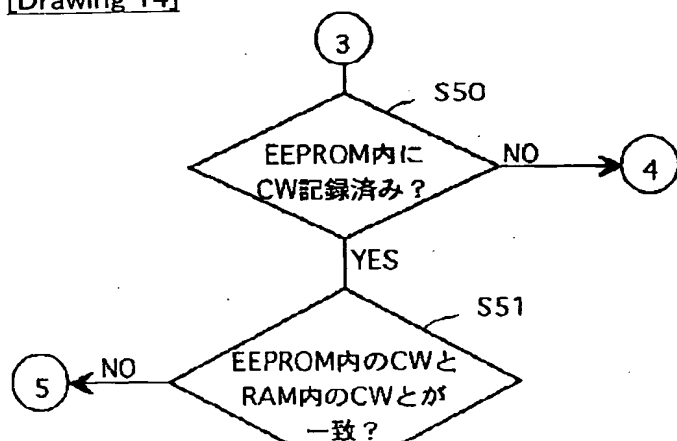


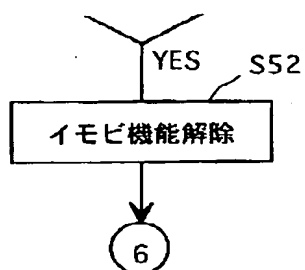


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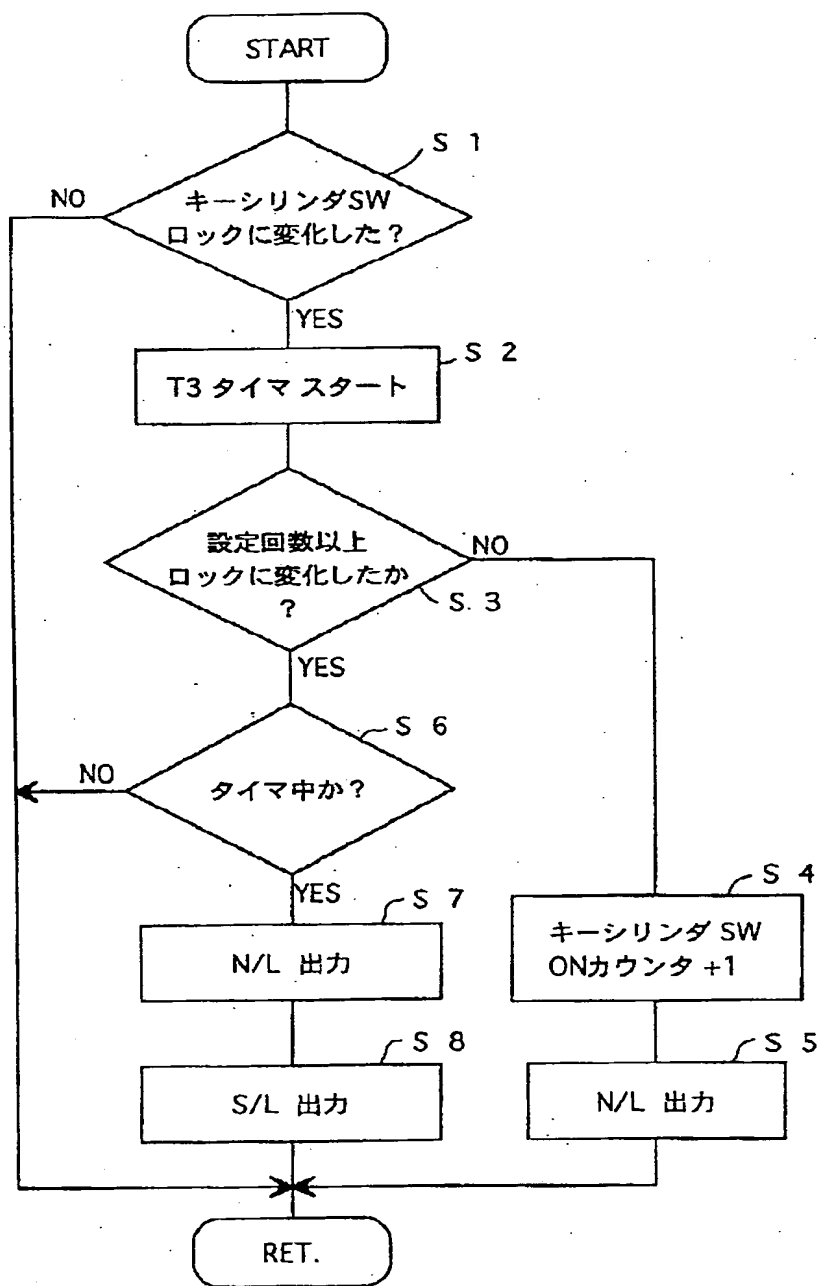


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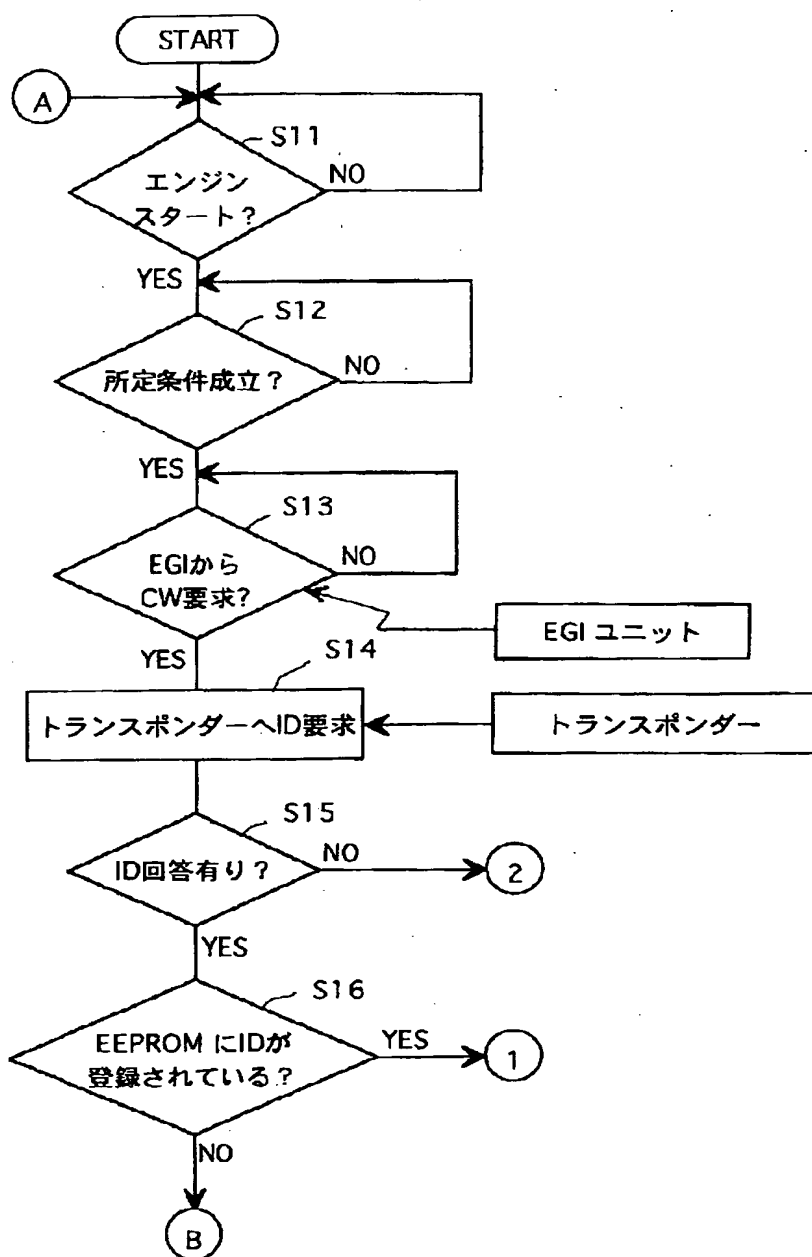




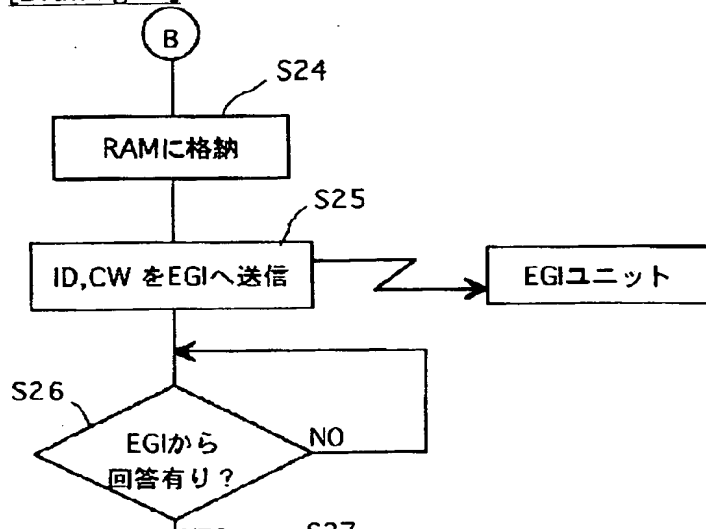
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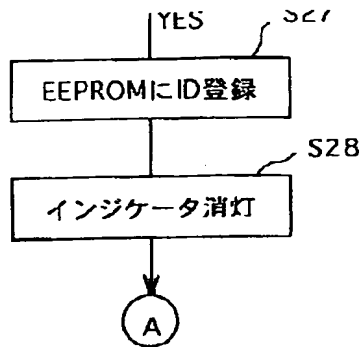


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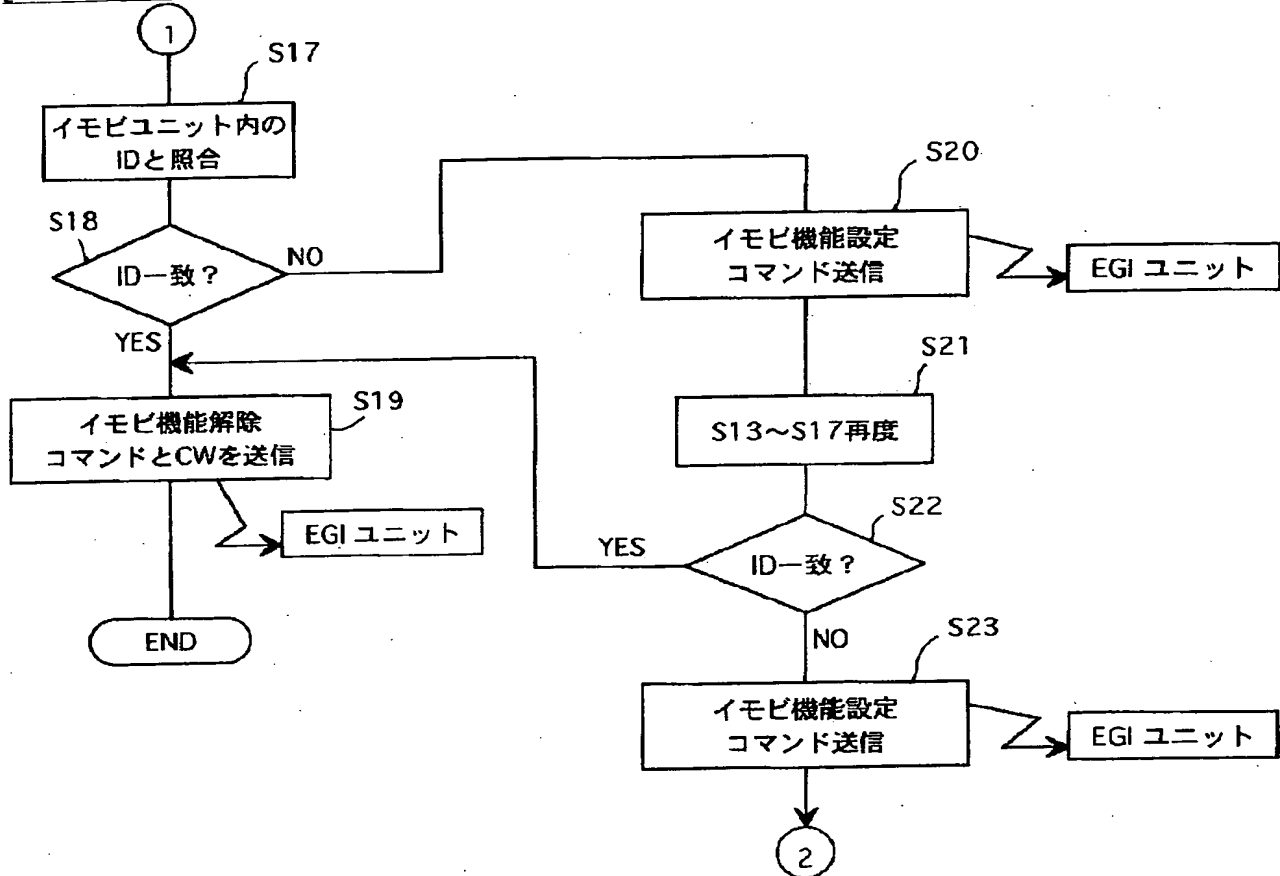


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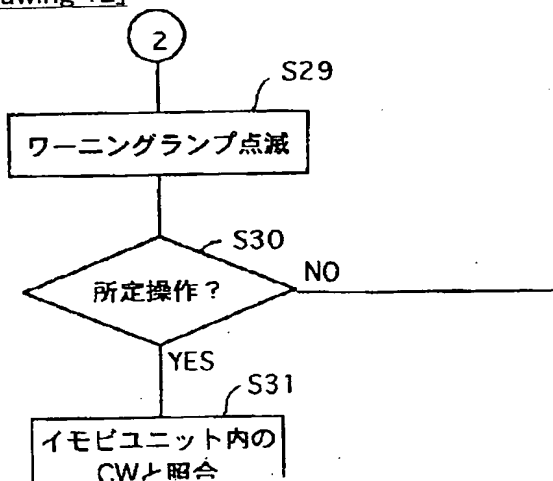


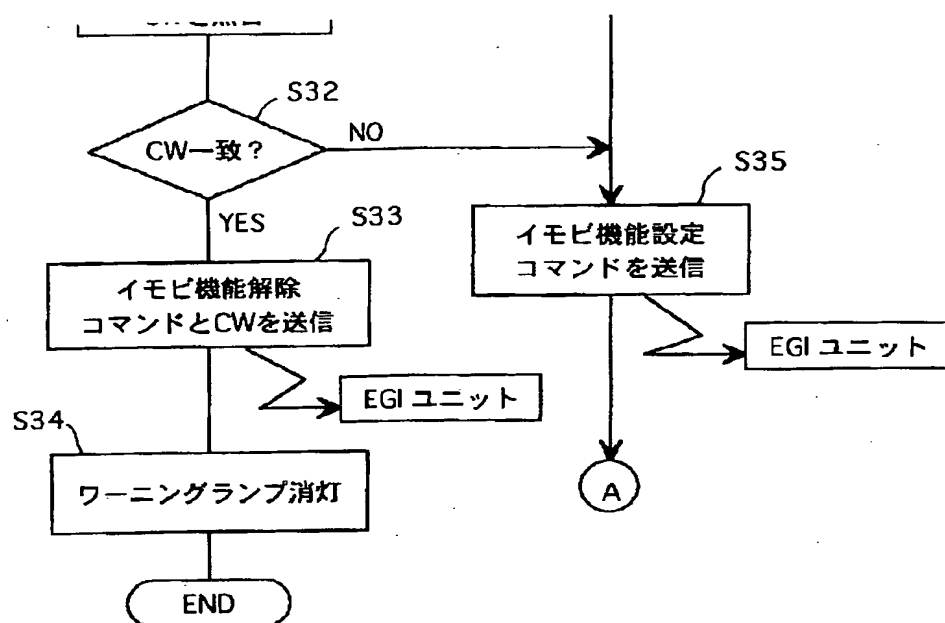


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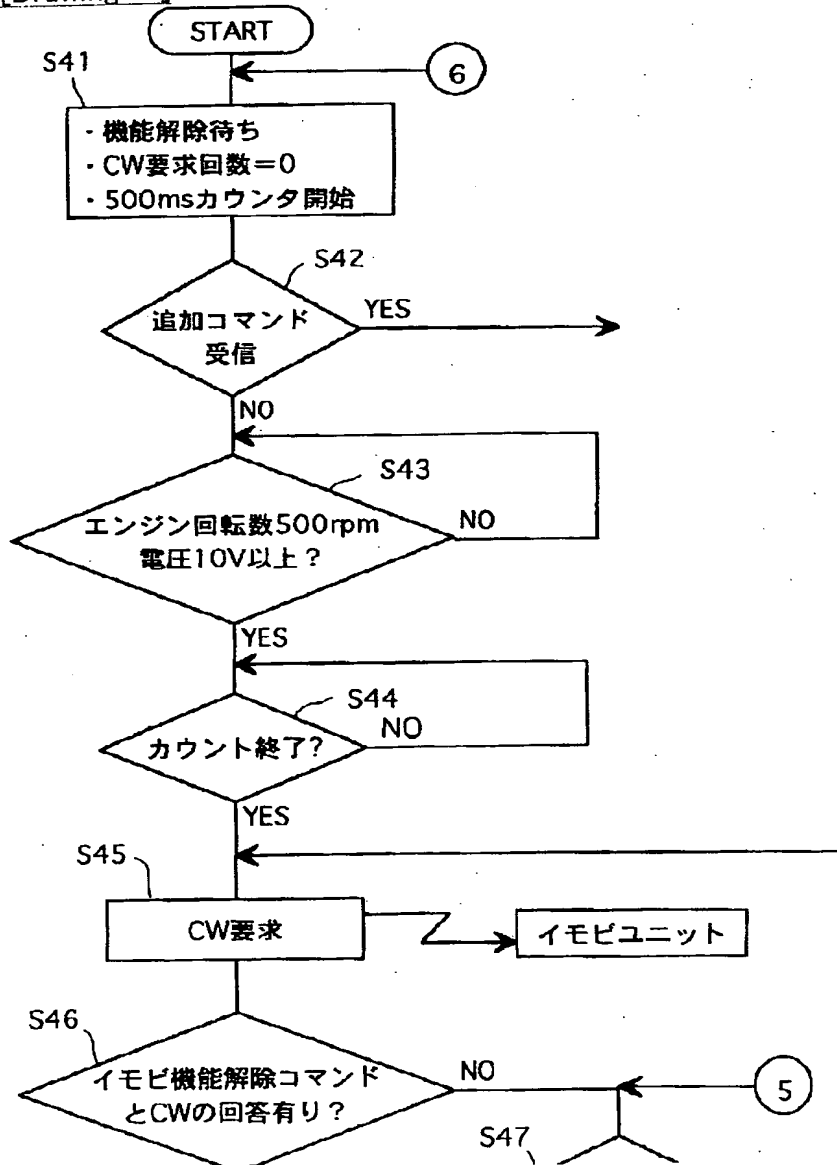


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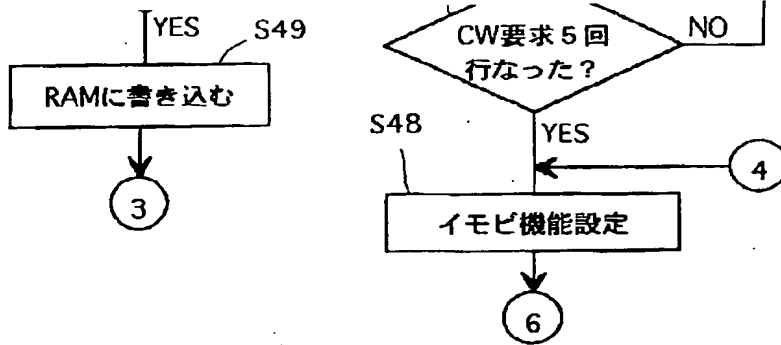




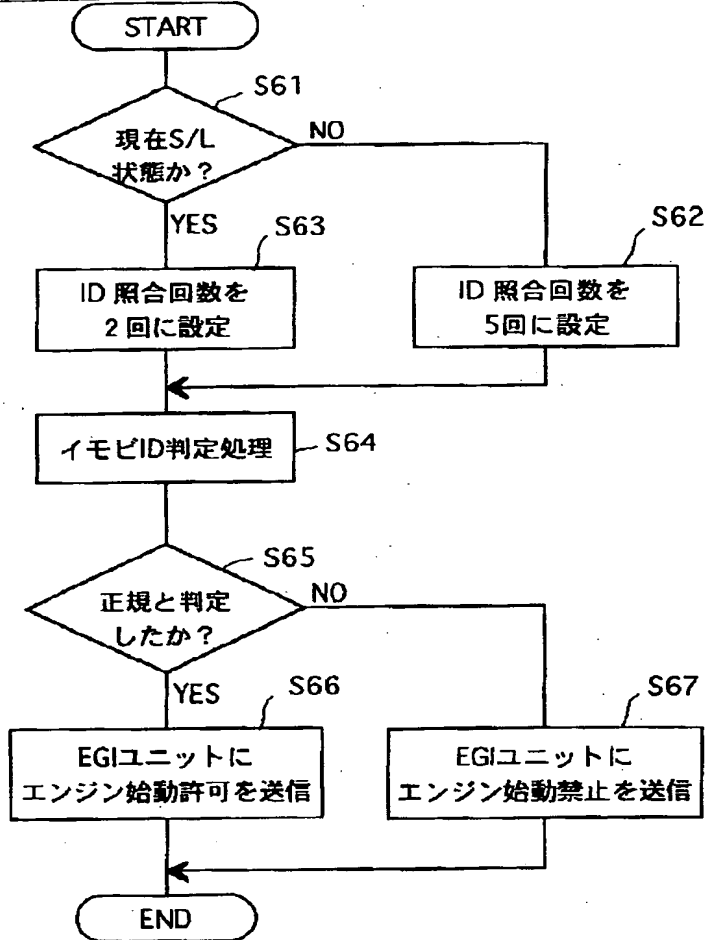
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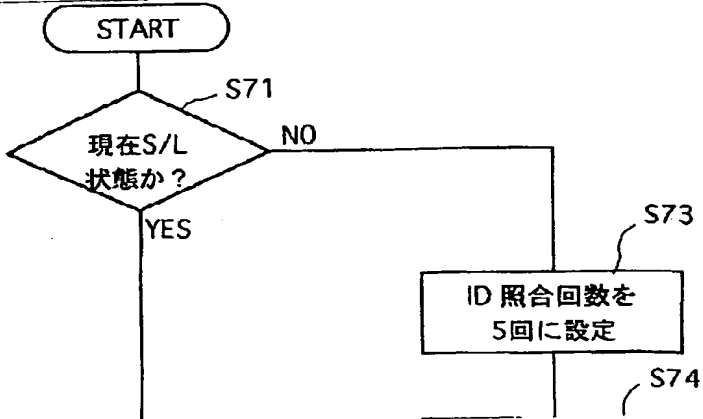


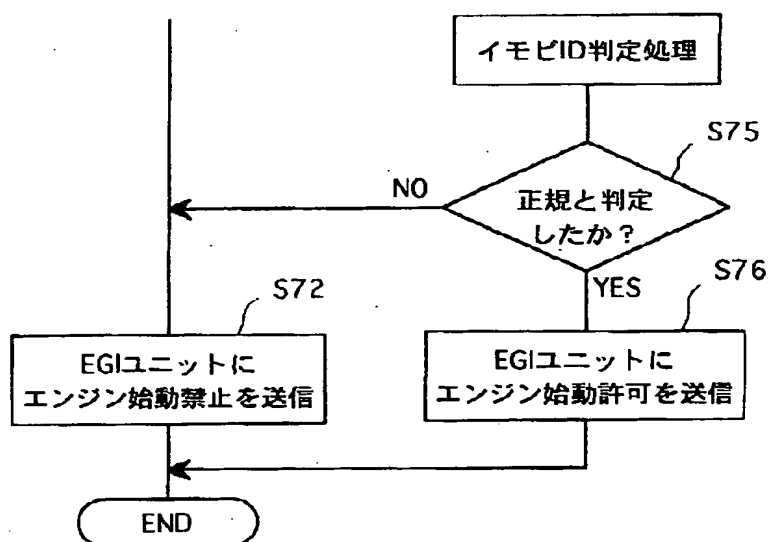


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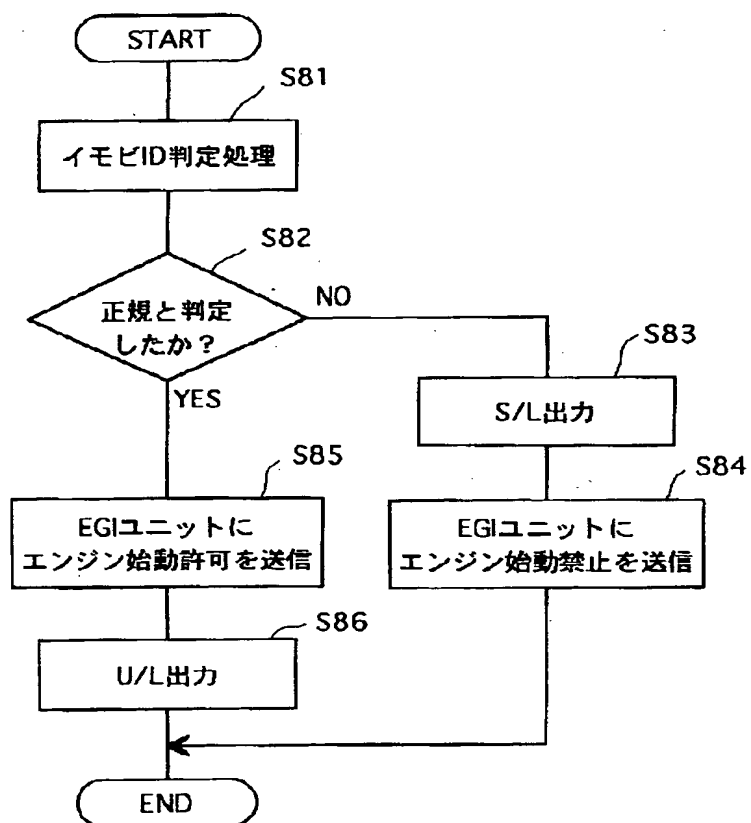


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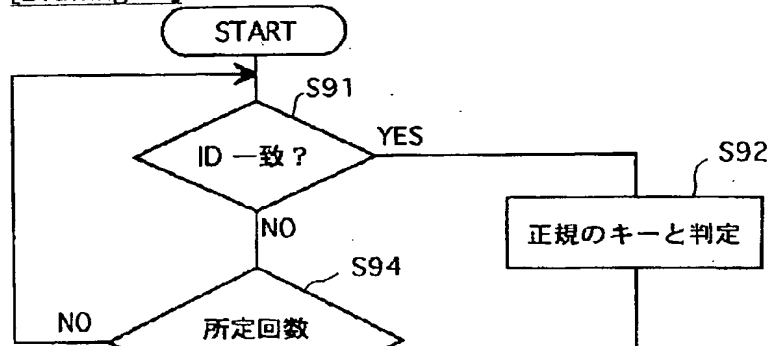


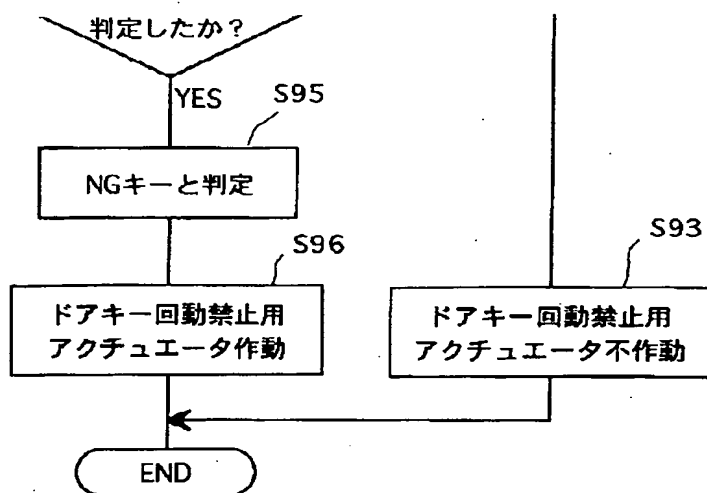


[Drawing 17]



[Drawing 18]





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[Translation done.]